THE DENTAL PRACTITIONER

A Journal of Dental Science for the Practitioner

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[*Incorporating the Proceedings of the British Society of Periodontology, and the Transactions of the British Society for the Study of Orthodontics*]

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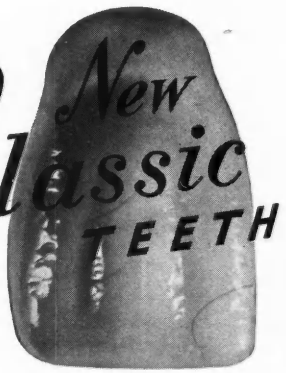

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(Incorporating the Proceedings of the British Society of Periodontology, and the Transactions of the British Society for the Study of Orthodontics)

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THE

DENTAL PRACTITIONER

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EDITORIAL

GENERAL ANÆSTHESIA

THE use of general anæsthesia for dental procedures has always held an important place in dentistry, and it is undoubtedly used to a greater extent in this country than anywhere else in the world. The Americans have tended to use local anæsthesia wherever possible, even in major dental surgery, and most dental schools in the States preach this doctrine. The position in this country is quite different, where general anæsthesia, largely in the form of nitrous oxide and oxygen, is used extensively in general practice. There are many patients who have never had a local anæsthetic but have lost their teeth one by one under "gas". The popularity of this form of anæsthesia is widespread and its reputation has been enhanced by the careful handling of this drug by the dental profession. Despite its disadvantages and drawbacks it has remained and will remain an extremely good method of anæsthetizing a patient for dental treatment, providing always that it is in the hands of a competent person. There are inherent dangers in the use of any drug that produces an unconscious state in a patient, and this is true for all dental anæsthetics, including nitrous oxide. The person administering the anæsthetic must be fully aware of all its pitfalls, and must be able to control the patient and the stage of anæsthesia throughout the whole operation. It is in fact very highly skilled work. The technique of waiting until the patient turns blue and then getting smartly to work will bring disastrous results, and has no place in modern anæsthetics. Even the simplest extraction under "gas" should be carefully planned with all persons involved—anæsthetist, dental surgeon, and nurse—acting as a team.

It is only by this method that the newer knowledge of general anæsthesia may be brought to bear on the case in hand, and the patient given the best possible treatment with the least disturbance. It is too much to expect the operator to administer the anæsthetic save in an emergency. The choice of anæsthetist must remain with the dental surgeon, and whether he chooses a professional colleague or a member of the medical profession who specializes in anæsthesia, the basic principle of teamwork remains—that of an anæsthetist, a dental surgeon, and a nurse working in harmony together to fulfil the demands of the highest standard of dentistry.

GENERAL ANÆSTHESIA IN DENTAL PRACTICE

By **P. MACKENZIE YOUNG**, L.D.S. R.C.S.
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and **RONALD A. GREEN**, M.A., M.B.B.Chir., F.F.A. R.C.S.
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It is generally felt that the use of nitrous oxide in general dental practice has too long been regarded as the "Cinderella" job in dentistry. Often the anæsthetic is given by the dentist with the help of his surgery assistant: this practice cannot be too strongly condemned. Both dental extraction and dental anæsthesia are skilled operations in themselves, and one operator cannot do justice to both at the same time. More frequently the anæsthetic is given by a local medical practitioner—often, by request, the patient's own doctor, or by a second dental surgeon. Although both dentist and general practitioner are trained to give dental anæsthetics, we feel that neither expedient is satisfactory. Our experience has shown that an efficient team of anæsthetist, dental surgeon, and surgery assistant has tremendous advantages to both patient and practice.

Nowadays, it is admitted by experienced anæsthetists that dental anæsthesia is both difficult and specialized. It should no longer be regarded as "just a dental gas", but as a skilful administration of nitrous oxide and oxygen, and, where required, other adjuvants.

APPROACH TO THE PATIENT

It is important that a careful history should be taken, and that where possible the patient is given the opportunity of choosing whether a local or general anæsthetic is preferred. However, if it is felt on clinical grounds that a particular type of anæsthetic is indicated this should be explained to the patient, after which the dentist should remain quite firm in spite of objections which the patient may raise. In certain cases this decision may be influenced by advice from the patient's general medical practitioner. It is important that the patient should feel that he (or more often she) is not being forced to a decision against his will, and if there is any doubt, it is wise to suggest that the advice of another reliable and experienced practitioner be sought.

Should the patient (or the general medical practitioner) have produced any history which the dentist feels is of interest to the anæsthetist, this should be discussed well in advance so that the necessary adequate steps can then be taken.

When the appointment is being made by the receptionist she should give the patient pertinent and incisive pre-operative instructions, making the following points:—

1. The patient must not eat or drink for at least three hours before the operation.
2. He should, if possible, be accompanied by a responsible person. This is essential where premedication is anticipated.
3. Under no circumstances should the patient drive a motor vehicle after the operation.

PREPARATION

We have found that having one or two "gas sessions" of about one hour a week is an admirable working arrangement from all points of view—it makes a busy anæsthetist's visits worth while, although he may be called in for emergency cases.

The surgery should be properly set up to a definite routine. Tongue forceps, swabs, Mason's gags, and a hypodermic syringe with ampoules of a circulatory stimulant must be at hand. The anæsthetist can check his own trolley and the surgery assistant should be careful to see that the cylinders are full and that spares are available. The dental instruments should be laid out and checked by the dentist and then covered with a towel. It should never be necessary to grovel in a drawer or cupboard during the operation in order to find the correct instrument. It is important to give the impression to the patient when he comes into the surgery of quiet efficiency and not hidden horrors.

The patient should be systematically prepared for operation, taken to the lavatory, and instructed to empty his bladder and to loosen tight underclothing, then quietly ushered into the surgery where he is greeted by the dentist and introduced to the anæsthetist. With as little delay as possible the dentist should re-examine the patient's mouth and explain clearly what is proposed to be done on that particular occasion. The dentist should then leave the anæsthetist to give *his* instructions after which the induction may be commenced.

ANÆSTHESIA

For the next few minutes the field is entirely the anæsthetist's and he should be left undisturbed. It is not advisable or necessary to strap the patient or to restrain his movements in any way, although the nervous patient may be permitted to hold the nurse's hand. He is asked to sit with his fingers interlocked—hands on his lap. During the induction with nitrous oxide it is essential to have complete quiet in the surgery, the only voice heard should be that of the anæsthetist talking to the patient; incidentally, the telephone should be disconnected. We have found it of infinite value for the anæsthetist to talk to and encourage the patient throughout the whole of the induction period. By this means the patient is given confidence and is assured that the anæsthetist is aware that he is still conscious. If during this stage the patient has an exaggerated excitement phase and relaxation cannot be achieved in spite of adequate oxygenation, it is unwise to attempt the operation. Under these circumstances other methods must be employed on a subsequent occasion. During the last few years we have always had trilene available on the anæsthetic machine and ethyl chloride at hand; with the careful use of these drugs this type of difficult case has been reduced to a minimum.

Anæsthesia is induced with pure nitrous oxide; the nasal mask being at first held away from the face and gradually lowered on to the nose as analgesia is produced. There is nothing a nervous patient resents more than having a mask clamped straight on to his face. As soon as surgical anæsthesia has been produced a low percentage of trilene may be introduced into the mixture, then the oxygen is added and slowly increased to about 15 per cent. The pharynx is now packed carefully by the anæsthetist and the dental operation commenced. Should mouth-breathing occur at this stage a *small* quantity of ethyl chloride can be sprayed on to the pack and a hand held in front of the patient's mouth, this prevents one from losing ground with the induction and usually produces a reversion to nasal breathing. After a minute or two the oxygen percentage should be further increased as necessary. Should these measures not produce satisfactory conditions for careful extractions, or not allow completion of operation planned, then further measures must be considered for another visit. Trilene used intelligently only very slightly prolongs the patient's recovery, and produces no undesirable after-effects.

PREMEDICATION

The small percentage of patients who do not behave well under gas and oxygen, or gas, oxygen, and trilene, usually respond well when adequately premedicated. We have found the following drugs useful:—

Barbiturates.—Phenobarbitone has proved very satisfactory as a premedicant for the nervous adult and sometimes for the mildly apprehensive child. 1–2 gr. for the adult and ½–1 gr. for the child produces a certain calm and makes induction easier, e.g., children between 4 and 6 years require three doses of ½ gr. phenobarbitone—one the night before, one on waking, and one 1½ hours before operation. The frightened or mentally defective child who does not respond to careful and sympathetic handling benefits little from phenobarbitone and should be given a more powerful narcotic. Nembutal, ½ gr. per stone bodyweight, has proved satisfactory; this dose frequently puts the child to sleep, but this is greatly preferred to an ugly scene before and during induction of anæsthesia.

Pethidine.—The plethoric male, particularly if he is in the habit of drinking large quantities of alcohol, is a notoriously difficult subject for dental anæsthesia. It is in these cases that we have found pethidine most useful. The drug

may be given by intravenous injection five minutes pre-operatively or by intramuscular injection about an hour before induction. We prefer the intramuscular route as the intravenous route may occasionally cause unpleasant symptoms such as nausea and vomiting, which is often accompanied by a fall in blood-pressure. A dose of about 4 mg. per stone body-weight has produced satisfactory results.

Oblivon.—This drug, which has received much publicity recently, is said to be effective in cases of acute apprehension. We have given it a short trial, but have found it to be no more effective than the well-tried barbiturates. This, however, is only the impression we have gained after our limited experience.

Pentothal.—In experienced hands intravenous pentothal has a definite place for dental anæsthesia in the chair. From time to time the anæsthetist meets the type of patient who will not tolerate the induction phase of nitrous oxide anæsthesia, no matter what premedication has been given. These patients respond well if a pentothal induction is used.

We do not attempt, nor think it advisable, to use pentothal as the sole anæsthetic agent. It is merely used for induction and the operation is not commenced until nitrous oxide anæsthesia has been established.

Before using this agent, it must be remembered that there are no short cuts to safety. Careful planning and preparations are essential. It is important that particular care is taken to ascertain that the patient has not had food nor drink for at least five hours before the operation; this is longer than the time advised for inhalation induction, but as pentothal produces an early relaxation of the cardiac sphincter of the stomach, regurgitation is more likely to occur. Also the type of patient selected for intravenous anæsthesia is more likely to have a delay in the emptying of the stomach owing to his apprehension and nervousness. Because of this hazard an efficient sucker as well as the necessary equipment for endotracheal intubation should be available.

Atropine should be given so as to depress the parasympathetic nervous system and thus reduce salivation and the chance of laryngeal spasm to a minimum.

The patient is asked to sit in the dental chair and the left arm is examined for veins. The skin is then cleansed with surgical spirit and 1/100 gr. of atropine is injected intravenously; the needle is not removed. The dentist makes his final examination and explains to the patient what he proposes to do, and in about three minutes the atropine has had time to take effect. The dental chair is then tipped slightly backwards and through the same needle the slow injection of a 2½ per cent solution of pentothal is carried out. Just before consciousness is lost he is asked to open his mouth and the prop is inserted. If this step is delayed some patients keep their mouths tightly closed and thus larger quantities of the drug will be required to produce relaxation. After consciousness is lost anæsthesia is continued with gas and oxygen through a nasal mask. The smallest possible quantities of pentothal are used and doses larger than 0·3 g. are exceptional.

Recovery of consciousness usually occurs very soon after nitrous oxide has been discontinued, but the patient remains sleepy for some while afterwards. On completion of the operation the patient is assisted into a recovery room, where he is allowed to lie down until fully co-ordinated.

The patient who has had a pentothal induction never wishes to have any other type of dental anæsthetic, but, as the recovery stage must always be regarded as at least one hour, this pleasant method is unpracticable for routine work in most busy practices. The patient must always be accompanied home after the operation and must not be permitted to drive a car for several hours. Before leaving the subject, it must be stressed that this drug is only safe in experienced hands and with an efficient anæsthetic machine at hand. It is considered unwise to use pentothal in the presence of myocardial disease accompanied by dyspnœa and in patients suffering from severe bronchitis and asthma. Pharyngeal œdema and trismus is an absolute contra-indication to the use of this method. Owing to the instability of the respiratory centre and difficulties of venepuncture children under 12 years are not considered good subjects for this technique. With the elderly, special care is needed owing

to their slow circulation time; here a rapid injection may lead to an overdose before consciousness is lost, and apnœic doses must be avoided at all costs.

ANÆSTHESIA IN CHILDREN

Dental anæsthesia in children requires special skill and patience on the part of the dental surgeon and anæsthetist. It is well to remember the old maxim that one should treat an adult like a child, and a child like an adult. The use of phenobarbitone and nembutal as premedication for the nervous and difficult child has already been mentioned, but it should be added that we find these drugs seldom necessary. A most important part is carried out by the dentist during the child's previous visits, and also in the correct approach to the child by the anæsthetist and dentist immediately before induction. Time taken in talking to the child in order to gain his confidence and co-operation is never wasted.

There is still a tendency to use vinesthene and ethyl chloride anæsthesia for the younger children, but these methods are by no means as safe as they are easy. The drugs are potent and toxic; the margin between adequate anæsthesia and deep anæsthesia is small; also they smell unpleasant and necessitate the use of a large and frightening mask.

Perfectly satisfactory and far safer anæsthesia can be obtained in children by the technique already described for adults, with slight modifications. After carefully explaining to the child what is going to happen, he is asked to bite on a prop so that he will not hurt the dentist's fingers. Nitrous oxide is then blown over the child's face through an adult nose-piece, which is gradually lowered so as not actually to come in contact with the face until the child is asleep. As soon as this has been achieved trilene is introduced into the mixture, and as surgical anæsthesia is obtained the oxygen is turned on and gradually increased to about 20 per cent. The majority of troubles which occur during dental anæsthesia in children are due to hypoxia, which children tolerate very badly; it is because of this that it is important to introduce oxygen early, and the use of trilene makes this much easier, allowing a long period of anæsthesia to be obtained with no more than the slightest transient period of cyanosis. Slight movement or phonation may occur during extractions, but can be ignored; it does not mean the child is conscious.

A carefully placed dental pack is of the greatest importance.

ENDOTRACHEAL ANÆSTHESIA

Time-consuming dental operations involving reflection of gum flaps and removal of alveolar bone, such as is often necessary to extract difficult and impacted teeth, is not satisfactorily carried out under simple nasal inhalational anæsthetic methods, owing to the difficulty of having an efficient pack and maintaining an adequate airway throughout. For all these cases endotracheal intubation is necessary. The majority of such patients are referred to hospital or are admitted to a nursing home for operation. In a small percentage of cases, for one reason or another, treatment in the dental surgery may be the only expedient, and the following procedure using endotracheal anæsthesia is adopted.

Before proceeding, it must be specially stressed that only a fully qualified and experienced anæsthetist should employ this technique, and he should check with the dental surgeon that there is an adequate supply of oxygen and that the apparatus is effective for artificial oxygenation. The patient is premedicated with 1/100 gr. of atropine half an hour before operation. The back of the chair is adjusted so that the angle of the thigh and the trunk is about 120°; the head-rest is fixed so that the head and neck assumes the "sniffing the air" position. Once the patient has settled comfortably the whole chair is tilted backwards so that the long axis of the body is at an angle of about 25° to the horizontal; 25 mg. of pethidine are given intravenously and followed immediately by a mixture of ½ g. of 5 per cent pentothal to which has been added 20 mg. of scoline; 5–10 c.c. of this mixture is given slowly (so as not to produce any muscle twitching) until the patient is asleep. This is followed by a further 25–30 mg. of scoline given slowly. We have found that by mixing

a little scoline with the pentothal we are able to avoid the severe muscle twitching which usually accompanies injection of large doses of scoline and causes unpleasant post-operative pain.

With these doses of scoline apnœa will occur, of course, and artificial oxygenation will be necessary. A few drops of endrine are then placed down each nostril and blind intubation is attempted; should the tube not easily enter the trachea a laryngoscopy is performed and the tube inserted under vision.

The packing of the pharynx is most important and it is felt that the anæsthetist is the best person to do this, but to the satisfaction of the dentist so that the field of operation is not obscured.

The induction can now be completed to an adequate depth of anæsthesia employing nitrous oxide, oxygen, and trilene; and the dentist can proceed with his operation.

The induction period described above should not take longer than three minutes and a reasonable operation time of thirty to forty minutes may be expected to result.

SUMMARY

We have endeavoured to stress that "nitrous oxide and oxygen" is the safest and least toxic of all anæsthetic agents, but we feel that the use of other drugs as adjuvants is not fully appreciated in dental work.

Not infrequently the weak link in dental surgery is the anæsthesia. This results in bad extractions being performed and/or incompletion of the operation planned. The anæsthetist must be able to provide anæsthesia with satisfactory relaxation and of sufficient duration for *careful* work. In many patients this can only be achieved by experience in the correct use of adjuvants to nitrous oxide anæsthesia, such as premedication, trilene, and pentothal, all of which have been discussed.

In order to get the best out of these methods, an experienced team and adequate recovery room are essential.

THE BASKET CROWN

By **P. J. HOLLOWAY**, B.D.S., L.D.S.

Junior Assistant, Department of Restorative Dentistry (Children's Section), London Hospital Dental School

A FRACTURED incisor in a school-child presents a double problem. Firstly, it must receive immediate treatment to minimize the danger of pulpal death. This question has been dealt with adequately by Ellis (1952), Slack (1948), Horsnell (1952), and others. Secondly, it must be restored to normal function and appearance, a matter which has received little publicity but which is of equal importance. If a fractured incisor is left unrestored until early adult life loss of space may occur owing to loss of contact with the adjacent teeth, or caries may commence in the fractured surface. Both of these factors will complicate tooth preparation. It must be borne in mind also that appearance matters a great deal during adolescence, especially to a girl, and the presence of a mutilated front tooth may be the source of considerable embarrassment. However, the permanent restoration of a fractured incisor that has remained vital is usually left until the late teens, when the pulp has receded sufficiently to make the tooth preparation a safe procedure, and when active eruption is almost complete. It is therefore advisable in these cases to use a restoration which remains in place for a number of years, but is eventually replaced by a permanent successor. A restoration of this kind has been called temporary-permanent.

Such a restoration for a fractured incisor must conform to certain standards:—

1. It must involve a very minimum of tooth preparation, as the heat produced during the preparation may add to the burden of an already traumatized pulp.

2. It must restore the appearance of the mouth.

3. It must be stable to all normal forces and yet easy to remove without damaging the tooth. This is necessary not only when it is to be replaced later, but also in case the tooth should receive a second knock, for the patient is still in the accident-prone age. If the restoration is displaced by the blow then the tooth will be relieved of some of the shock.

4. The tooth preparation must be such that it will not interfere with or necessitate any alteration in the normal preparation for the permanent restoration which will be necessary eventually.

The basket crown satisfies the standards required of a semi-permanent restoration if a jacket crown, which is usually the most satisfactory permanent restoration, is to be fitted at a later date.

Fig. 1.—Diagrammatic view of labial aspect of tooth preparation to show mesial and distal slice.

Tooth Preparation.—No tooth preparation should be undertaken until all emergency treatment has been completed, and the pulp and periodontal membrane have recovered from the original trauma. Should the anterior teeth be crowded the preparation will be made easier by alining them first with orthodontic treatment.

The essential preparation consists of a mesial and a distal slice, made with a disk, to remove any undercut as far as the gum margin, and thus to allow a thin layer of gold to pass between the two teeth (*Fig.* 1). The palatal surface is ground to relieve the bite if necessary, and the labial enamel is stoned only sufficiently to produce a flat surface which will eliminate any undercut. The preparation is completely shoulderless (*Figs.* 2, 4).

Fig. 2.—Diagrammatic view of tooth preparation from the incisal aspect.

If a large portion of the crown has been lost, then the retention may not be adequate. In most of these cases pulpal exposure at the time of the accident would have necessitated a partial amputation of the pulp. This will allow two platinized gold pins to be inserted into the fractured surface for additional stability.

Fig. 3.—Model of fractured tooth.

Fig. 4.—Tooth preparation.

Impression.—The technique is identical with that for a jacket crown. A copper impression ring is selected to fit the tooth, and is trimmed very carefully so that the cervical edge passes

just to the depth of the gingival trough all the way around the tooth. A composition impression is taken in this ring and then a plaster

Fig. 5.—Cast crown with sprues and button still attached.

form is a thin layer of casting wax completely covering the mesial, distal, and palatal surfaces of the model and restoring the tooth to its original shape. A labial window is left for a facing. To prevent displacement of the crown palatally a thin labial bar is waxed as high as possible on the labial surface from the mesial to the distal side. The pattern is sprued to the incisal edge, and a secondary sprue runs from that point to the labial retention bar to ensure that this casts (*Fig.* 5).

A quick method of making the wax pattern is to build the wax on roughly, and then form the palatal and incisal aspects with a Caulk's Crown Form, from which the whole of the labial aspect has been cut away. It will be found necessary to remove a considerable amount of the palatal surface of the crown form at the cervical margin otherwise the crown will be longer than the original tooth. A very thin layer of casting wax is used to thicken the crown form slightly, and the whole pattern is lightly flamed. The labial retention bar is added, and the pattern invested and cast.

Facing.—As the whole of the labial surface of the crown is to be faced, provision must be

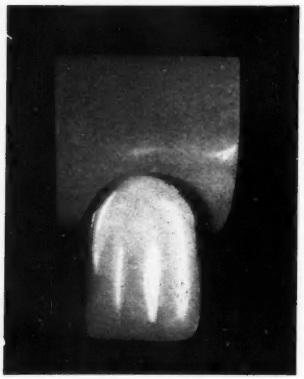

Fig. 6.—Labial view of faced crown.

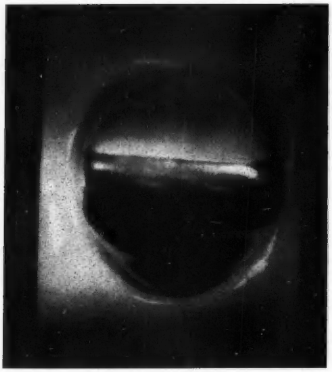

Fig. 7.—Incisal view of faced crown.

impression of the adjacent teeth, a wax squash-bite, and a shade complete the work of one visit.

Wax Pattern.—A copper-plated model and plaster bite are made from the impressions, and on these a wax pattern is built. Its final

made for retention of the facing when the wax pattern is being made. A slight undercut on the incisal edge of the labial bar, in conjunction with undercuts on the mesial and distal edges of the crown, will be sufficient support for the main retention lock which is in the labial

window. When the cast crown has been polished it is replaced on the model and a wax facing shaped. The crown is re-invested and an acrylic facing processed into it. (*Figs.* 6, 7.)

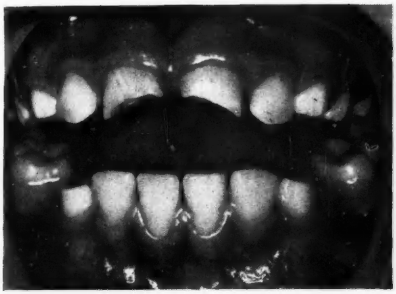

Fig. 8.—Tooth preparation on fractured incisor.

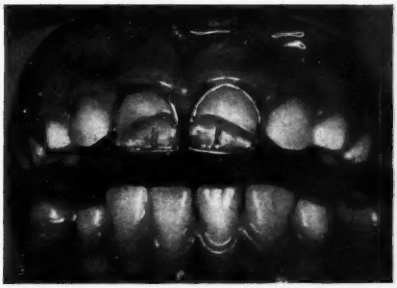

Fig. 9.—Try-in of unfaced crown.

Subsequent Visits.—The crown is cemented to the tooth at the next visit in the usual fashion. The whole procedure can be completed in two visits, which should not be separated by more than a few days, to obviate the possibility of the adjacent teeth closing.

The tooth must be checked regularly at subsequent visits to ensure that the pulp is still vital. Regular radiographs and vitality tests will provide the necessary information.

The radiographs should show further development and eventual closure of the root with no sign of apical infection, and the gold backing to the crown will allow vitality tests to be carried out.

Figs. 8–10 demonstrate a case of a boy aged 10 years who fell and fractured $\underline{1|1}$, exposing the pulp chambers. The immediate treatment was to perform a partial amputation of the pulp on both teeth and splint them. Basket crowns were fitted six months later.

Acknowledgement is made to Mr. A. M. Horsnell, Director of Restorative Dentistry, London Hospital Dental School, for permission to publish the case shown in *Figs.* 8–10.

I also wish to thank Mr. P. Broadbery and Mr. J. Morgan, of the London Hospital Photographic Department, and Miss P. Archer, Medical Artist to the London Hospital Medical College, for their assistance with photographs and diagrams.

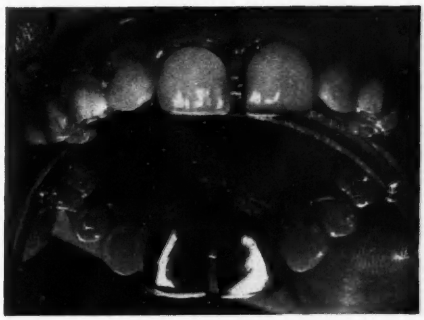

Fig. 10.—Faced crown cemented in place.

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"TINY-TOT" ASPIRINS

CHILDREN are often loath to take pills and tablets, particularly if the taste is bitter. The Rexall Drug Company Ltd. have announced the manufacture for children of special aspirins with a raspberry-flavoured coating. There are many times in the course of dental practice when it is convenient to give a child, particularly the very young, some mild form of anodyne. These new "Tiny-Tot" tablets will help both the dentist and the patient in those cases where aspirin is thought necessary.

NOTES ON DENTAL RADIOGRAPHY

III. EXTRA-ORAL RADIOGRAPHY

By **G. R. SEWARD**, M.D.S. (Lond.), F.D.S. R.C.S. (Eng.)

Demonstrator in Dental Radiology, The London Hospital Dental School

(*Continued from page* 253)

EXTRA-ORAL radiography is necessary in dentistry for the examination of those parts of the facial skeleton which are not accessible to intra-oral radiography and for the examination of lesions which are too large for periapical or occlusal films.

Terminology.—Radiographic views are described by stating the direction in which the rays travel. For example, when the tube is behind the patient and the film is in front the view is a postero-anterior view (P.A.).

The most commonly used extra-oral films in dentistry are those taken to show part of the mandible from the side, without superimposition of the opposite side of the jaw or the spine. When such views are taken for regions between the condyle and the midline they are described as "oblique lateral jaw", and those of the area between the two canines as "rotated postero-anterior".

Cassettes.—When a more powerful apparatus than a dental set is available a double-wrapped film prepared for use without a cassette may be used for oblique lateral jaw views, and this will give a picture with better bone detail. Normally, however, a screen-sensitive film for use in a cassette is employed in dental practice for oblique lateral jaw and all other extra-oral examinations.

Cassettes have a radiolucent front to enable the rays to reach the film and a radio-opaque back to prevent secondary radiations fogging the image. Two calcium tungstate screens are held in firm contact with the film by fibre pads. In the normal way less than 1 per cent of the radiations reaching the film are effective in forming the latent image. When fluorescent screens are used an image in visible light is formed at the screen surface which reinforces the direct effect of the rays and enables a much shorter exposure to be used, about one-fifth of that required for the double wrapped film.

Techniques.—The methods used for examining the mandible will be considered first. These are the lateral jaw, oblique lateral jaw, rotated P.A. jaw, McQueen-Dell, and the P.A. jaw views. Techniques for the maxilla and sinuses will follow and finally profile films will be mentioned.

TECHNIQUES FOR THE MANDIBLE

1. THE LATERAL JAW VIEW

The head is positioned against a half-plate ($6\frac{1}{2} \times 4\frac{3}{4}$ in.) size film cassette so that the sagittal plane is parallel to the film. The central ray is directed perpendicular to the film at the point of occlusal contact of the first molars. An anode–film distance of 25 in. is suitable for a dental set. With more powerful apparatus this may be increased to 4 ft., so reducing the magnification of the tube side of the mandible relative to the film side.

2. OBLIQUE LATERAL JAW AND ROTATED POSTERO-ANTERIOR JAW VIEWS

The object in these views is the same, namely to view part of the mandible from the side without superimposition of the spine or the rest of the jaw. They will, therefore, be considered together and will be seen to form a series of views from the condyle to the opposite canine region.

Four oblique lateral jaw views will be described, for:—

a. The ramus and subcondylar region.
b. The angle and third molar region.
c "3–8" region.
d. "1–6" region.

The right and left rotated P.A. views display $\overline{3}|\overline{2}$ region and $\overline{2}|\overline{3}$ region respectively.

General Principles of positioning for the Oblique Lateral Jaw and Rotated P.A. Views.—The obliquity with which some of these views are taken leads to distortion of the image from that which a true lateral projection would give.

Therefore the angulation of the head should be the minimum consistent with raising the image of the opposite side of the mandible above the image of the film side.

If the mandible is considered it will be seen that radiographically the ramus of one side may only be viewed from below the angle of the opposite side. As the head is rotated it will be seen that the space between the vertebral column and the ramus allows more of the mandible opposite to be viewed with less angulation of the head away from the viewer. When the region between the canines is reached no angulation is required. Hence an adjustable angle board is required.

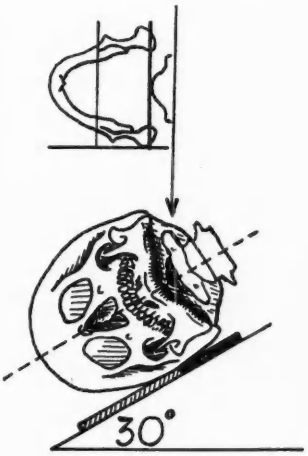
As the mandible is separated by the soft tissues and half the thickness of the cassette from the film, the object–film distance is much greater than with intra-oral views: an increased anode–film distance is therefore desirable. Bearing in mind the increase in exposure time necessary with an increased distance, an anode–film distance of 25 in. is usual with a dental set.

The distance, once decided upon, should be kept constant to keep the exposure time constant and can be measured conveniently with a steel tape measure.

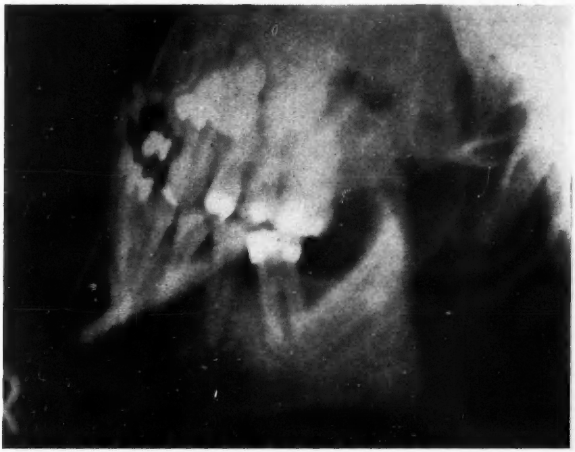
Lead side markers should be used as a routine to label the films.

For all the oblique lateral jaw views the slope should face away from the patient if the table-type angle board is used. If the head is to be upright the slope of the angle board should be such that the head is inclined sideways to lay on it. The upright position is more easily maintained by some patients, and it is unfortunate that apparatus is not more commonly available for this position. The long side of the cassette on the table-type angle board should form an acute angle with the patient's body, the apex being towards the shoulder of the side to be radiographed. By making the lower border of the jaw lie parallel to the long side of the cassette, the head is extended on the spine and the angle between the spine and the ramus is opened up. In the upright position the head should be thrust forwards to obtain the same effect.

These principles are only a guide to the radiography of the region, but where anatomical variations demand it, deviations may be



A



B

Fig. 1.—A, A diagram showing the position of the head on the angle board for an oblique lateral jaw view of the ramus. The upper part of the figure shows the mandible and vertebral column from below, and shows how the ramus is viewed from below the opposite angle. The arrow represents the central ray in the lower figure. B, The resulting radiograph from the technique shown in A.

more successfully made from a known standard method.

Detailed Techniques for the Oblique Lateral Jaw and Rotated P.A. Views.—

a. The Ramus and Subcondylar Region (*Fig.* 1).—The patient is seated facing the table and a 30° angle board is placed opposite the patient's shoulder of the side to be radiographed. The patient finds it easier to extend the head on the neck when positioned over the board placed in this position. A cassette is placed on the angle board to form an acute angle with the body, as described above.

One of the radiographer's hands is placed under the patient's neck, the other over the top of the head, and the jaw positioned over the cassette. The sagittal plane of the head should lie parallel to the plane of the cassette and the head should be extended on the neck until the lower border of the mandible lies parallel to the long border of the cassette. The tip of the nose will be about 3 in. from the cassette.

The central ray is directed vertically at a point about 1 in. below the angle of the mandible of the side nearest the tube. If the neck of the condyle is required the patient is asked to protrude the mandible at this point.

This position imposes a considerable strain on the patient, so there should be no delay in making the exposure, but caution him to "Keep quite still, don't swallow, and hold your breath". As soon as the exposure has been made say "Keep your head down, but breathe on". Move the tube away before allowing the patient to raise the head.

The oblique projection used in these views throws the image up the film, so in all cases the mandible should be positioned towards the lower (neck) border of the cassette. If the maximum angle of the angle board is 25°, a 5° tilt on the tube towards the head will correct the angulation, though with patients with high cheek bones 25° angulation of the board will be sufficient.

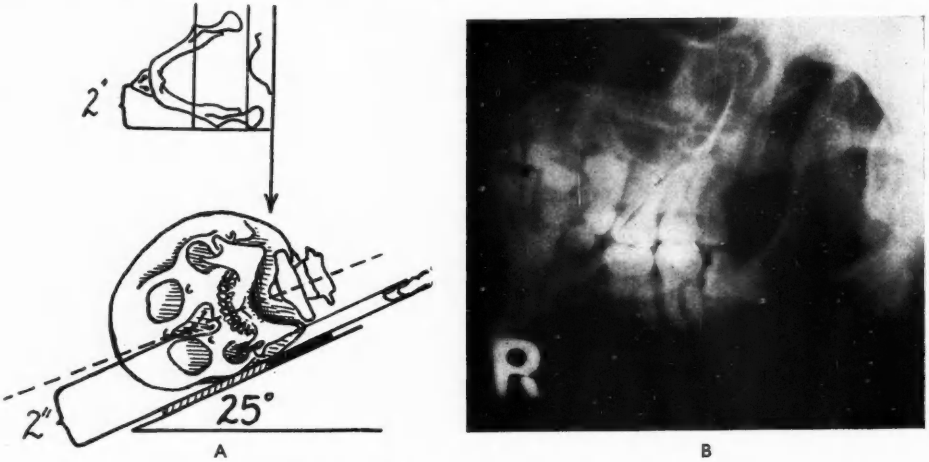


Fig. 2—A, The technique for an oblique lateral jaw view of the third molar region of the mandible. B, The resulting radiograph from the technique shown in A.

b. The Angle and Third Molar (*Fig.* 2).—The angle board at an angle of 25° is placed opposite the shoulder of the side to be radiographed as previously described. The head is placed over the cassette so that the midline of the face is almost parallel with the surface of the cassette. The head is extended on the neck until the lower border of the mandible is parallel to the long border of the cassette, and then rotated until the nose is 2 in. from the cassette. If the hand is held flat the fingers

should just be able to slip between the angle and the surface of the cassette. Direct the central ray vertically downwards at a point about $\frac{3}{4}$ in. below and just behind the angle of the side of the mandible nearest the tube.

c. 3–8 *Region* (*Fig.* 3).—The angle of the board is dropped to 20° and the head positioned over the cassette in a similar manner to that in (*b*), with the following differences: The head is rotated until the tip of the nose is only $\frac{3}{4}$ in. off the film and the midline of the face

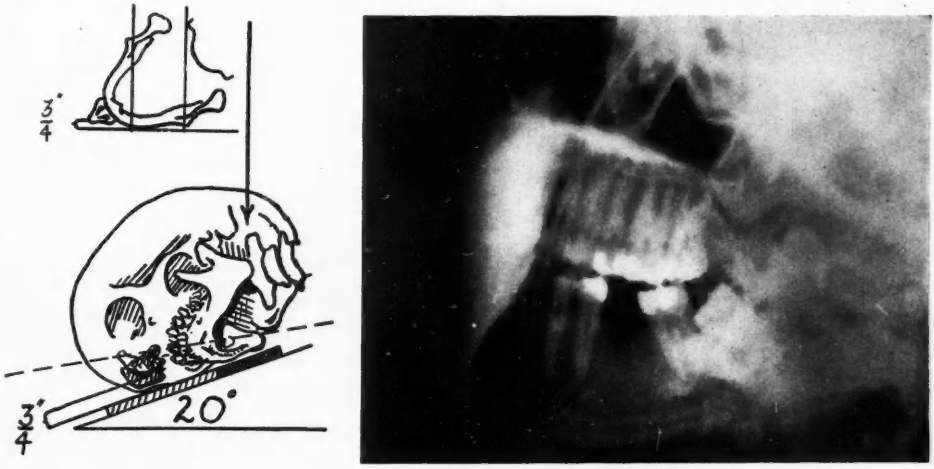


Fig. 3.—A, The technique to show the body of the mandible. The upper part of the figure shows how the body of the mandible is viewed from below and behind the angle. B, The resulting radiograph from the technique shown in A.

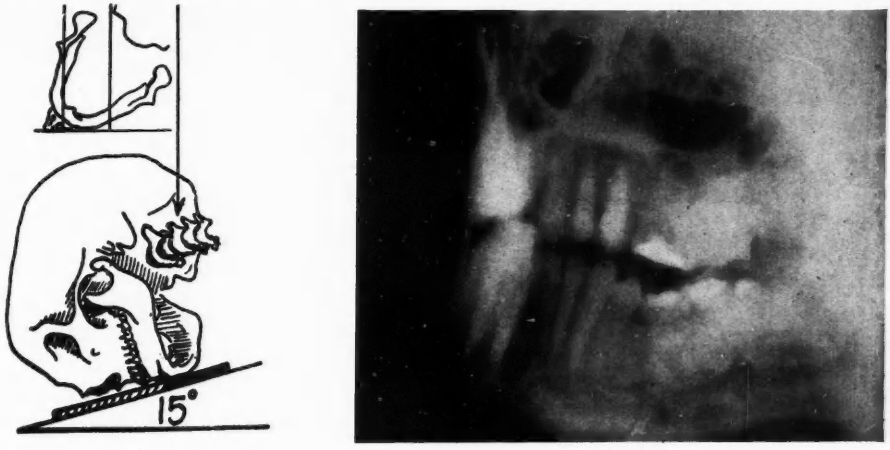


Fig. 4.—A, Shows how a radiograph of $\overline{6\text{–}1}|$ region may be obtained. B, The radiograph resulting from the technique shown in A.

allowed to assume a more horizontal position until the mandible is in contact with the cassette. It will then be found that the zygoma and 3–8 region of the mandible are in contact with the surface of the cassette. The tube is centred below and behind the angle of the mandible.

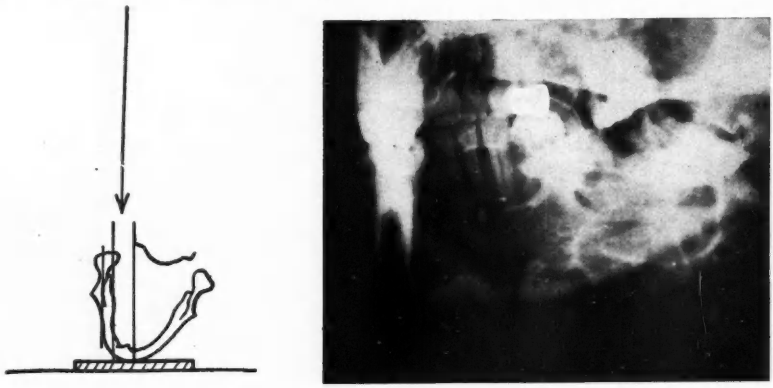


Fig. 5.—A, Illustrates the technique for the rotated P.A. view. B, The radiograph resulting from the technique shown in A.

d. 1–6 *Region* (*Fig.* 4).—Only a 15° angle of the angle board is required. This time the board is placed in front of the patient's body, and slightly towards the shoulder of the side opposite to that to be radiographed. The head is placed so that the mandible, zygoma, and slightly squashed nose are in contact with the cassette. The head should be thrust forward to extend it on the neck. The tube is centred behind and below the angle of the mandible.

e. The Rotated P.A. View (*Fig.* 5).—This view shows the midline of the jaw, from the canine on one side to the lateral incisor on the other. The view is said to be of the "side" on which the canine is seen.

The positioning is described for a right rotated P.A. view ($\overline{3|2}$ region).

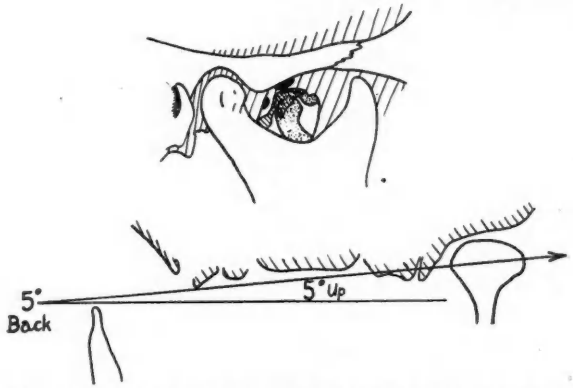


Fig. 6.—The McQueen-Dell technique. The upper figure shows the condyle viewed through the opposite sigmoid notch. The lower shows the direction of the central ray below the base of the skull, over the mandible, and through the sigmoid notch and the opposite condyle.

The cassette is placed flat on the table in front of the patient and slightly towards the left shoulder. The head is positioned over the cassette so that the chin and nose, flattened towards the left side, are in contact with its surface. This will bring the incisor region of the mandible in close contact with the cassette. Displacement of the head towards the left curves the cervical spine and the space between it and the left ramus of the mandible is widened. By rotating the head towards the right the lower border of the left ramus of the mandible is brought into a position at right angles to the cassette. The central ray is directed perpendicular to the film, below the left mastoid, and between the spine and the left ramus of the mandible.

To avoid errors, if a right rotated P.A. is taken, not only should a lead R be placed on the cassette, but it should be placed on the patient's right-hand side.

Table I.—Showing the Positions for the Oblique Lateral Jaw Views and the Rotated P.A. View

Region	Angle of Angle Board	Sagittal Plane	Angle of Jaw	Body of Jaw	Zygoma	Tip of Nose
Ramus and subcondylar region	30°	Parallel to film	Not in contact with cassette	Not in contact with cassette	Almost in contact with cassette	3 in. from cassette
Angle and third molar region	25°	Slightly more horizontal than plane of film	Fingers of hand held flat will just pass between angle of jaw and cassette	Not in contact with cassette	In contact with cassette	2 in. from cassette
3–8 region	20°		In contact with cassette	In contact with cassette	In contact with cassette	¾ in. from cassette
1–6 region	15°		Not in contact with cassette	1–6 region of jaw in contact with cassette	In contact with cassette	Slightly squashed contact with cassette
2–3 region or rotated P.A.	Flat	Inclined from perpendicular towards side to be radiographed	Lower border of opposite angle at right angles to film	Chin in contact with cassette	Not in contact with cassette	Flattened towards opposite side

3. THE MCQUEEN-DELL TECHNIQUE
(*Fig.* 6)

This gives a lateral projection of the condyle without bony superimposition.

The pointer cone of the dental set is removed and replaced by an aluminium filter to remove soft radiations and a lead diaphragm which stops down the beam of rays.

A cassette is placed against the side of the head to be radiographed, parallel to the sagittal plane. The centre of the film should be a little above and behind the condyle.

The tube is brought close to the patient's face and centred over the sigmoid notch of the side opposite to the condyle to be radiographed. The central ray is directed upwards 5° and backwards 5°. The exposure is about 1 second.

This is a short-distance technique and great care should be taken not to over-irradiate the patient's skin. It is probably not wise to make more than two exposures a side, or one exposure a side if other views are to be taken in this area. Fourteen days should elapse before further radiography is undertaken.

4. THE P.A. JAWS VIEW
(*Fig.* 7)

Though it is possible to produce radiographs in this position and in the occipito-mental and occipito-frontal position with a dental set, it

should be realized that they are at the limit of possibility with such an apparatus. The best results can only be obtained with a large set and with the use of a Potter-Bucky diaphragm.

The head is positioned so that the sagittal plane and a line joining the outer canthus of the eye and the external auditory meatus are

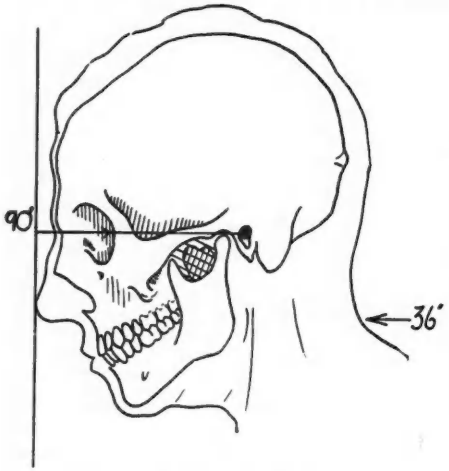


Fig. 7.—A diagram of the P.A. jaws view.

at right angles to the film. A whole-plate ($8\frac{1}{2} \times 6\frac{1}{2}$ in.) film and cassette should be used. The central ray is directed perpendicularly to the film at the nape of the neck and the incisor teeth.

When the necks of the condyles are required the tube may have to be angulated 20° towards the head.

TECHNIQUES FOR THE MAXILLA

1. The Lateral Sinuses View.—This view shows the facial bones from the side.

The film is placed against the side of the face to be radiographed and the head is positioned so that its sagittal plane is parallel to the plane of the film. The central ray is directed perpendicular to the film at a point 1 in. in front of and 1 in. above the external auditory meatus. The anode–film distance should be about 36 in., or 25 in. with a dental set, for this and subsequent views.

2. The Occipito-mental View (*Fig.* 8).—For this view the head should be vertical so that a fluid level in the antrum may be seen.

The head is positioned with the nose and chin approximately in contact with the cassette. The sagittal plane should be at right angles, and a line joining the outer canthus of the eye and the external auditory meatus at 45° to the film. The central ray is directed at right angles to the film at a point $1\frac{1}{2}$ in. above the external occipital protuberance.

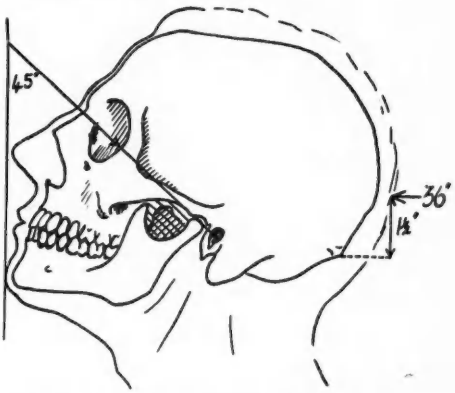


Fig. 8.—A diagram of the occipito-mental view.

3. The 30° Occipito-mental View.—The head is positioned in a similar manner to that for the occipito-mental view, but the tube is angulated downwards 30° and the central ray directed through the vertex of the skull. The direction of the rays will be seen to be almost at right angles to the zygomatic arch, fractures of which are well demonstrated by this view.

4. The Occipito-frontal View.—For this view the orbito-meatal line is at right angles to the film and the tube centred $\frac{1}{2}$ in. below the external occipital protuberance and at right angles to the cassette.

5. The Oblique Facial Bones View.—The head is placed on the casette so that the nose, chin, zygoma, and supra-orbital margin are in contact with it. This should bring the sagittal plane to an angle of 40° with the film. The tube, angulated 10° towards the head, is centred below the mastoid of the side away from the film. It should be noted that the side

to be radiographed should be the side away from the film.

TECHNIQUES FOR PROFILE RADIOGRAPHS

1. The Soft Tissue Profile.—The head is arranged so that its sagittal plane is parallel to a whole-plate cassette and so that the profile will be projected on to the film. The central ray is directed at the centre of the face and perpendicular to the film from a distance of 6 ft. An exposure time of 3–4 seconds is required with a dental set. This will give a radiograph showing the outline of the soft tissues and the skull.

2. The Bony Profile.—A profile view with more bony detail may be obtained in the child with a dental set by decreasing the anode–film distance to 4 ft. and increasing the exposure time to 6–8 sec.

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VARIATIONS OF THE MODIFIED ARROWHEAD CLASP*

By **C. P. ADAMS**, B.D.S., F.D.S.

THE modified arrowhead clasp (Adams, 1950, 1953) can be used to clasp any tooth, deciduous or permanent, and has been found efficient in the retention of all types of removable appliance.

From time to time, however, variations of the design, and extensions of the use of the clasp have been suggested and tried out. It would seem timely, therefore, to describe and illustrate some of the special varieties of the clasp that are now in general use.

Canines and Deciduous Molars.—*Figs.* 1 and 2 show the construction of the clasp for deciduous molars and canines. For canines, 0·6-mm. wire is best, as it is sufficiently strong and can be well fitted into the groove between the canine and the adjoining teeth on the lingual side (*Fig.* 3), so avoiding the bite of the lower incisors. For deciduous molars 0·7-mm. wire is used. The clasp must be very carefully made on account of the shallowness of the crowns of these teeth, otherwise the tags of the clasps may not lie closely enough in the embrasure between the marginal ridges, and interfere unnecessarily with the occlusion.

Rotated Teeth.—If the tooth to be clasped is rotated (*Fig.* 4), the clasp is applied exactly as if the tooth were in normal position. That is to say, the bridge between the arrowheads is kept parallel to the general line of the arch and is not rotated so as to remain parallel to the buccal surface of the tooth. The reasons for this are, firstly, while one undercut of the tooth has rotated out of sight and reach, the other has become more accessible and an excellent grip can be obtained on it with one arrowhead, while the other arrowhead, if not

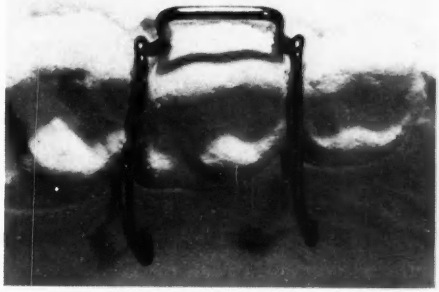
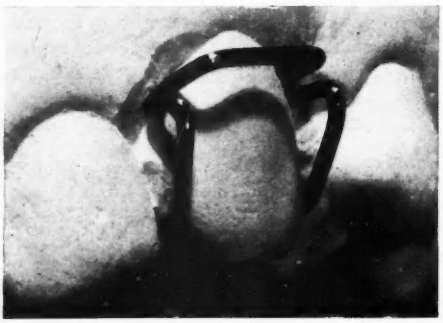
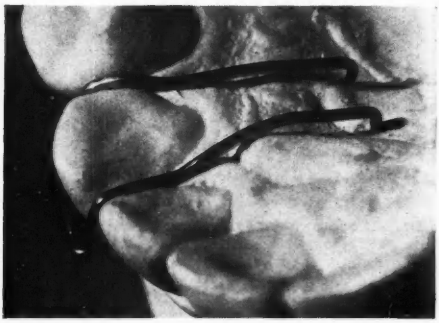


Fig. 1.—For deciduous molars do not make the clasp too wide, keep tags well down on the embrasures.

*A demonstration at the meeting of the British Society for the Study of Orthodontics, held on May 10, 1954.

perhaps having an undercut to grip, still impinges on the tooth and stabilizes the clasp as a whole. Secondly, to rotate the clasp involves the risk of bringing one arrowhead into contact with the tooth adjoining.





Figs. 2, 3.—For canines use 0·6-mm. wire and fit the tags well down between the teeth on the lingual side.

Traction Hooks.—Intermaxillary traction hooks may be either incorporated in the bending of the clasp or else welded or soldered to the normal type of clasp later on. *Fig.* 5 shows standard traction hooks incorporated in the bending of the clasp. These have the merits of strength and ease of construction, and require no welding or soldering. *Fig.* 6 is the same hook on an upper first premolar. If the sulcus is shallow behind and below a

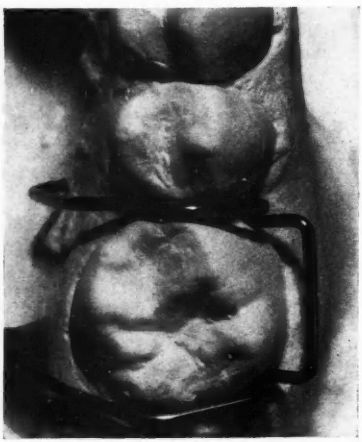


Fig. 4.—When clasping a rotated tooth keep the bridge parallel to the line of the arch.

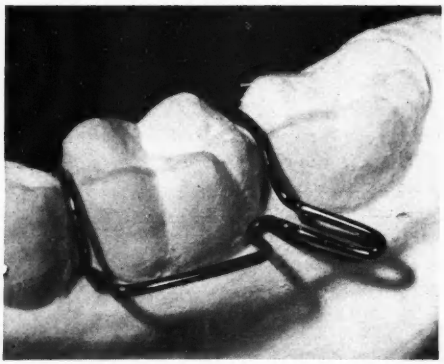


Fig. 5.—The standard lower posterior traction hook. Very strong, simple to construct.

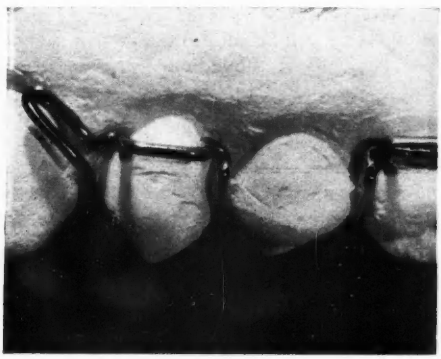


Fig. 6.—The standard upper anterior traction hook.

lower tooth, as sometimes happens with a lower first permanent molar, it is not feasible to use this form of hook, as it is inclined to project into the soft tissue where it is reflected from the alveolar process at the bottom of the sulcus.

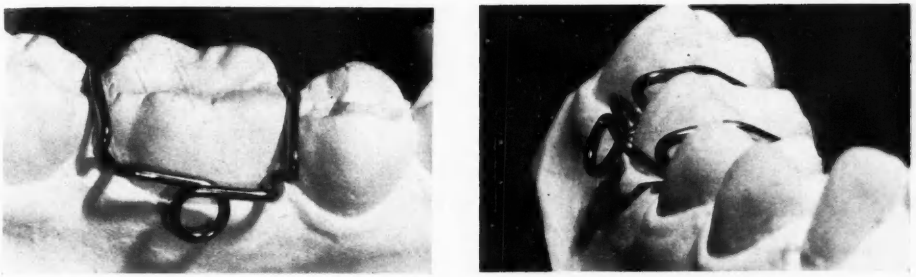


Fig. 7.—The loop hook for a shallow sulcus. No welding or soldering required.

The alternatives are shown in *Fig.* 7, a simple turn in the bridge over or through which the elastic is looped, or the hook in *Fig.* 8 A, which may be soldered or welded using 0·7-mm. soft wire. The free end of this hook should be turned in under the bridge of the clasp (*Fig.* 8 B) to avoid irritating the soft tissue of the cheek.

A B

Fig. 8.—The welded or soldered hook. Can be put on if hooks have been overlooked in the construction of the plate.

Often in place of an upper traction hook, it is convenient to loop the elastic over the bridge of a plain clasp before the plate is inserted and the other end of the elastic is hooked in the ordinary way on to a hook on the lower clasp.

The Single Arrowhead.—Where the last tooth in the lower arch is semi-erupted, as often occurs with a first permanent molar at 6 to 7 years of age, or a second permanent molar at 11 or 12 years of age, the distal undercut is not accessible, and on that account the distal arrowhead is omitted. The mesial

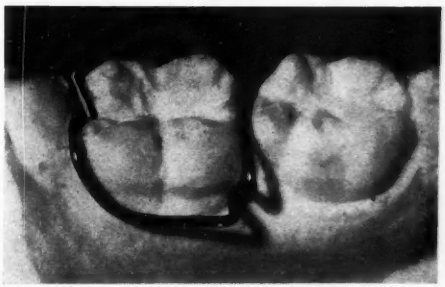
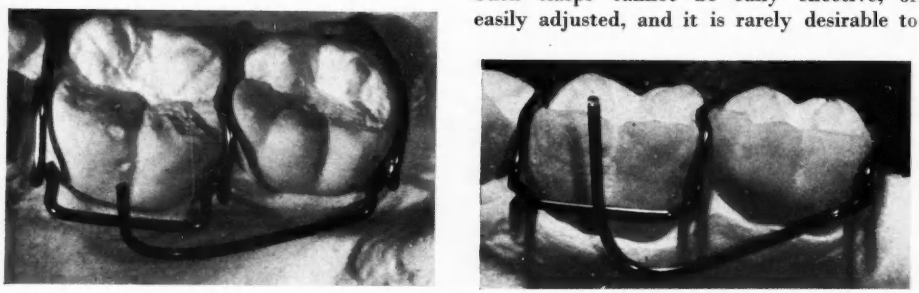


Fig. 9.—The single arrowhead.

arrowhead, however, in conjunction with a clasp on a premolar farther forward, provides valuable retention (*Fig.* 9).

The Accessory Arrowhead.—Where utmost retention is required and two teeth on one side separated from one another by a space or by a third tooth are not available, two adjoining teeth may be clasped using the accessory arrowhead. *Figs.* 10 and 11 show this clasp, constructed for use on $\overline{6E|}$ in *Fig.* 10 and for $|\underline{56}$ in *Fig.* 11, where it was desired to have very firm retention of the plate and to move $|\underline{4}$. The free tag of the accessory arrowhead is welded or soldered to the bridge of the main arrowhead after the plate is processed. Before this soldering or welding is done, the appliance should be tried in and the accessory arrowhead should be checked for accuracy of fit.



A B

Fig. 10.—The accessory arrowhead during construction.

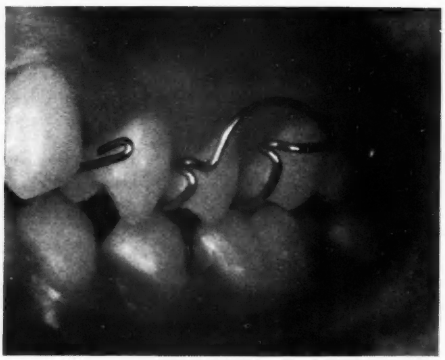


Fig. 11.—The accessory arrowhead in the mouth.

The practice of putting modified arrowhead clasps on two adjoining teeth which are in contact with one another must be condemned. Such clasps cannot be fully effective, or easily adjusted, and it is rarely desirable to have two tags passing over the same contact point.

Tubes.—It is common practice to-day to use tubes on modified arrowhead clasps either on molars for free-sliding arches used in the retraction of upper incisors with intermaxillary or extra-oral traction, or on premolars for the attachment of a night-time extra-oral appliance to an intermaxillary traction plate.

These tubes are easily attached by free-hand soldering after the plate has been processed.

If the plate is replaced on the model on which it was waxed up and processed and a long length of tubing is used, orientation of the tubing is greatly facilitated. The actual length of tubing required is then cut free and trimmed down to size and smoothed (*Figs.* 12, 13). The base-plate material should be kept cool by covering it with a wet napkin during soldering. The tube may be attached to the bridge of the clasp laterally or directly above or below. If attached directly above or below, the tube is liable to interfere with the gum margin or with the occlusion as the case may be. If attached laterally, it may project too far into the cheek and cause irritation. The needs of each case must be carefully studied

and the placing of the tube decided on with these difficulties in mind.

Variation in Gauge of Wire.—Some operators have found that in their hands the clasps work better if made in certain circumstances

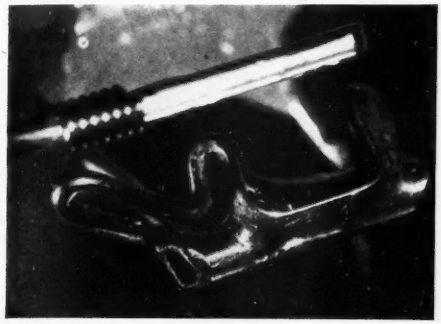


Fig. 12.—Tube on an upper first premolar showing the end of the extra-oral attachment which plugs into the tube.

in gauges of wire thinner or thicker than 0·7 mm. The writer has found that 0·7-mm. wire satisfies all requirements for molars, premolars, and deciduous molars. 0·6-mm. wire has been found most suitable for canines.

Fractures of the Clasp.—There are two sharp bends in the clasp, both in the neighbourhood of the arrowhead. If these bends are made once during construction of the clasp, as they should be, and are not bent and rebent, they will not break in use. It does happen occasionally, however, that a clasp will fracture at one or other of these bends owing to over-stressing of the wire during construction of the clasp. If the wire is cleaned with a cuttlefish disk and the ends accurately opposed with the wire made passive, the lumen of the loop may be filled with solder, so effecting a rapid repair (*Fig.* 14). The baseplate adjoining the clasp should be wrapped in a damp napkin for protection during soldering.

The author wishes to acknowledge the suggestion of the single arrowhead (*Fig.* 9) by Mr. F. D. Rowe, L.D.S., of Liverpool; and the loop hook (*Fig.* 7) by Miss C. C. Jefferson, L.D.S., of the Eastman Dental Hospital, London.

Fig. 13.—Tube on molar clasp for free-sliding buccal arch.

The author is greatly indebted to Mr. D. R. McDougall, of the Department of Photography, Eastman Dental Hospital, for his painstaking care in the preparation of the illustrations for this paper.

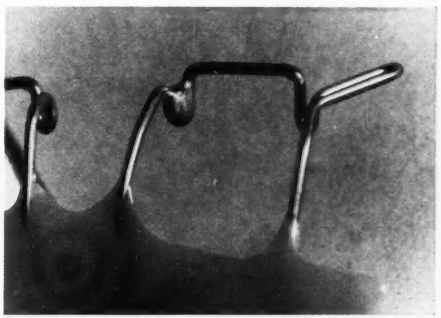


Fig. 14.—Soldered repair of arrowhead.

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— — (1953), "The Modified Arrowhead Clasp—Some Further Considerations", *Ibid.*, Jan.

ORTHODONTIC TEACHING MODELS*

By **J. S. ROSE**, B.D.S., F.D.S. R.C.S.

ORTHODONTIC teaching models were demonstrated to illustrate movement of single teeth or groups of teeth by removable appliances. The models were constructed in acrylic simulating natural mouth colours. The bases of the models were hollow and the moving sections were attached to the main portion of the models by rods and tubes, along which the desired movement could be achieved by activating the appliances.

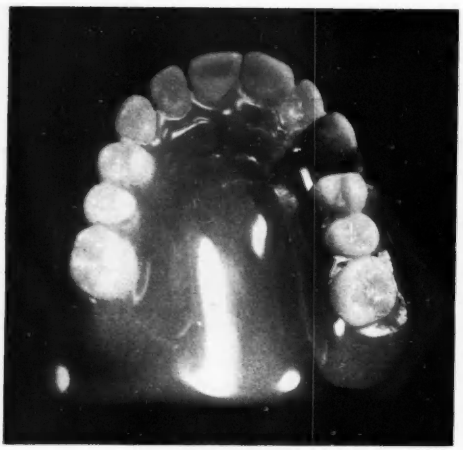

Fig. 1.—Buccal segment retracted, $\underline{3}$ in position.

Fig. 2.—Model with appliance in position, before "treatment".

Fig. 3.—Case "treated".

The models presented showed:

1. *Treatment of an Outstanding Canine* by:—

a. Distal movement with a Schwarz plate of the buccal segment, which travelled on a square rod and tube as the screw was turned, thus accommodating the canine. *Fig.* 1 shows $\underline{3}$ in place with the buccal segment retracted. Guide rod is shown.

b. Extraction of the second premolar and distal movement of the first premolar along a tube to accommodate the canine. *Fig.* 2 shows appliance in position before $\underline{5}$ was extracted. *Fig.* 3 shows $\underline{5}$ extracted, $\underline{4}$ retracted, and $\underline{3}$ almost in place.

2. *Treatment of a Superior Protrusion* by extraction of first premolars, retraction of the canines along tubes, and subsequent retraction of the incisors, which were individually suspended to allow them to be retracted.

* A demonstration at the meeting of the British Society for the Study of Orthodontics, held on May 10, 1954.

A PORTABLE CRANIOSTAT FOR USE WITH NORMAL DENTAL SURGERY EQUIPMENT*

By G. C. DICKSON, B.Ch.D., F.D.S. R.C.S.

THIS craniostat was designed for use in dental surgeries in widely separated hospitals and had to be carried by car. It is based on an original design for a multi-purpose head orienter by Freeman (1950) and Rasmussen (1950).

It consists of a square-section rod which carries at one end a cassette holder and fixed ear-post. The other ear-post is carried on an accurately sliding arm, and between the two is an adjustable neck-rest. At the opposite end is a device for attaching the X-ray tube and a 45° mirror, which is used to observe the tilt of the patient's head (which is otherwise not possible because of the bulk of the X-ray head). The whole is supported on a rod which can be inserted into the dental chair in place of the head-rest.

Fig. 1.—Craniostat attached to dental chair.

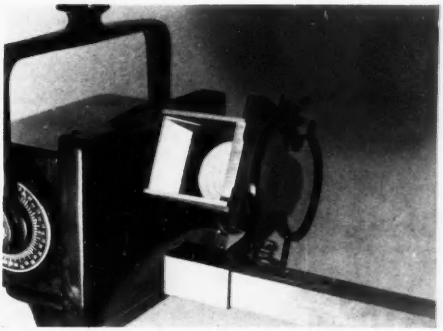

Fig. 2.—X-ray tube end of craniostat showing mirror for observation of patient's posture.

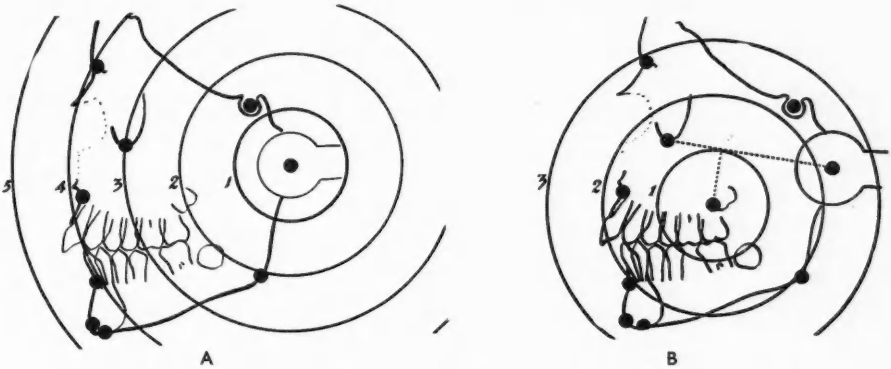

Fig. 3.—Diagram showing relation of points used in analysis to central ray; A, opposite porion; B, opposite "molar position."

* A demonstration at the meeting of the B.S.S.O. held on May 10, 1954.

In use the central ray passes through the molar region. This point is chosen because it lies roughly in the centre of the points used in clinical cephalometrics and thereby tends to reduce the distortion caused by the short anode-film distance (3 ft. 6 in.). An arbitrary position measured 1 in. below the Frankfurt plane from a point 2 in. from the porion is used.

If desired the sighting can be removed and the X-ray tube attached in the more usual position, with the central ray passing through the two external auditory meati.

A comparison of films taken in the two positions shows no difference which could not be attributable to observational error (e.g., 0·5° in angle SNA) while the clarity of the pictures, particularly in the dental region, was definitely greater in films taken from the "molar position".

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BOOK REVIEWS

THE HUMAN MASTICATORY APPARATUS. An Introduction to Dental Anthropology. By MEYER KLATSKY, D.D.S., and ROBERT L. FISHER, B.A., D.D.S., New York. With a Foreword by W. M. KROGMAN, Ph.B., A.M., Ph.D., and LEUMAN M. WAUGH, D.D.S., D.D.C. 6 × 9⅛ in. Pp. 246 + xxiv, with 85 illustrations. 1953. N.Y.: Dental Items of Interest Publishing Co. (London: Henry Kimpton.) 45s.

DENTAL evolution is closely associated with human evolution, which is thereby of considerable interest to the dental student. The fact that the teeth and jaws are sometimes all that remain of our ancient forebears is good reason for the inclusion of physical anthropology in the dental curriculum. This book tries to bridge the gap and to relate the two sciences of dentistry and anthropology.

The authors have failed to co-ordinate and classify the anthropological material: a table showing the relationship in time between the various fossils, their common name, the site, etc., would have assisted considerably the new and serious student to understand the text. The significance of the dental structure in classifying the fossil is not emphasized enough and many of the later period fossils are not mentioned.

A theme constantly expressed is the relationship between the physical nature as opposed to the chemical content of food and dental health, which is on the whole accepted. That the form and structure of the jaws is affected by function is questioned by many orthodontists, but the authors make a strong case for it on anthropological evidence.

The warning against the formulation of laws as a result of anthropometric technique is a timely one, as is also the support of observation as a scientific technique; all biologic variations are not measurable by present techniques and many can only be observed.

The text could be condensed without loss of value; the authors tend to be verbose and on the whole appear to be writing for those unfamiliar with anthropological and dental terms, though Margolis and Björk planes are unfamiliar terms even to the dentist and certainly to the anthropologist, so should be defined. Extracting from other sources has been overdone; a number of quotations illustrating a single point defeat their purpose, confusing the reader, who is more likely to be interested in what has been said rather than in how. The same criticism can be made of the eulogy on Sim Wallace, which is out of place in a book of this nature, though one could wish that his principles, as valuable to-day as when advocated thirty to forty years ago, were more often acknowledged.

On the whole the book is well presented and covers a wide field from anthropology to dental public health; the illustrations are good and the type clean. It is not to be assumed that because the anthropological illustrations are "by courtesy of the American Museum of Natural History", that all the specimens illustrated are housed in New York. This easily read text-book should be of considerable value as an introduction to anthropology and dentistry and to draw attention to some of the almost forgotten aspects of research.

H. E. W.

MEDICAL AND SCIENTIFIC INVESTIGATIONS IN THE CHRISTIE CASE. By FRANCIS CAMPS, M.D., Lecturer in Forensic Medicine at the London Hospital Medical College. Foreword by the Attorney General, Sir LIONEL HEALD, Q.C., M.P. 6 × 9 in. Pp. 244 + xxiv, with 47 illustrations and 6 coloured plates. 1953. London: Medical Publications Ltd. 30s.

THIS factual report on the medical and dental investigations into the Christie case offers fascinating reading for those interested in forensic medicine. The Christie trial will go down in criminal history as one of the most astonishing series of murders in this country. It was not a baffling police case, but it did involve a tremendous amount of detailed tedious work by all those connected with the investigation. Christie was found responsible for six murders and each of his victims required the most minute examination and identification. When one considers that two of them were just a mere pile of odd bones found in the garden, which had to be separated from all the bones the dogs had buried as well, the amount of work entailed can be appreciated; particularly when it is realized that these two victims were identified in a relatively short time.

Undoubtedly the dental evidence considerably aided the identification, and a chapter on this aspect of the case is written by Professor A. E. W. Miles. In addition to this chapter, other dental evidence is dealt with on various aspects of the case throughout the book. This is rather unfortunate, as the reader has to keep referring back or forward to the relevant pages, and that gives rise to a certain amount of repetition.

Further chapters deal with the exhumation of Mrs. Evans, gives an account of the curious pink appearance of the teeth, and finally concludes with the Scott Henderson inquiry into the judicial hanging of Evans.

This single investigation brought problems in all aspects of forensic medicine and forensic dentistry and the book gives a clear picture of how an investigation of this nature is undertaken, and also of how much work goes on behind the scenes which is unreported in the press.

N. L. W.

INTERNAL MEDICINE IN DENTAL PRACTICE. By BERNARD I. COMROE, A.B., M.D., F.A.C.P., Late Associate in Medicine, Schools of Medicine and Dentistry of the University of Pennsylvania; LEON H. COLLINS, jun., A.B., M.D., F.A.C.P., F.C.C.P., Associate in Medicine, Schools of Medicine and Dentistry of the University of Pennsylvania; and MARTIN P. CRANE, B.S., M.D., Sc.D.(Hon.), Chief Physician, The Misericordia Hospital, Philadelphia. Fourth edition. $5\frac{3}{4} \times 9$ in. Pp. 563, with 86 illustrations and 6 coloured plates. 1954. London: Henry Kimpton. 56s.

THAT this text-book is now in its fourth edition speaks highly of it, and it contains a wealth of information of great value to those in dental practice. There is perhaps a little too much detail, and deletions rather than additions are needed, with a little more attention paid to general principles. Long lists of diseases such as the forty-six conditions producing joint pains on page 404, and weight charts such as the one on page 267, should have their place taken by suitably chosen illustrations in a book of this nature.

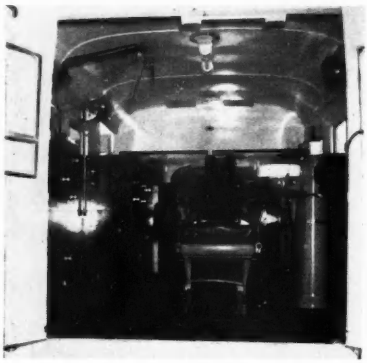
The rather unusual method of outlining important clinical features favours quick revision for those taking examinations, and this book is to be recommended to both senior students and dental practitioners.

B. E. D. C.

DENTAL SERVICE IN THE COMMONWEALTH

DENTISTRY IN MALAYA

READERS will recall the article on dentistry in Malaya by C. F. Mummery, O.B.E., E.D., F.D.S., in the December issue of the journal. The service has now been improved even more by the addition of a mobile dental unit for use in the rural areas. It is the first unit of its kind there and is staffed by a dental surgeon and a nurse. The four photographs above show the interior and exterior of the complete unit.



(*Photographs by Singapore P.R.*)

SMALL-INTESTINE POLYPOSIS ASSOCIATED WITH A CHARACTERISTIC CIRCUMORAL PIGMENTATION

PIGMENTATION on the lips and mucous membrane of the mouth has now been established to be one of the features of a syndrome which is characteristic of polyposis affecting small intestine.

The case described has two essential features:—

1. Brown pigmented spots on the mucous membrane of the lips and buccal cavity.

2. Multiple polyposis in the intestinal tract.

Third feature—familial incidence, as described by other investigators—was not present in this case.—SMITH, M. (1954), *Brit. J. Surg.*, **41**, 367.

PARLIAMENTARY NEWS

OPENING a debate on the health service on Monday, May 10, Mr. A. Blenkinsop (Lab., Newcastle-upon-Tyne East) referred to dental charges, especially with regard to charges for treatment. Much of the value of more children receiving treatment was lost, he said, because of the falling away of the number of adults receiving treatment. He called on the Minister to obtain accurate data on this matter, which was not covered by ordinary returns, because a good deal of the simple treatment was being paid for directly by the patient to the dentist.

"It is now quite commonly being argued by dentists and others that many adults and adolescents who should be persuaded to go to them for a regular check-up on their teeth are no longer going but are waiting until they get a mouthful of trouble on the natural basis that they have anyhow to pay £1 and might as well get their money's worth. I believe that is occurring to a very large extent. If that is true, it is bound to be having a very bad effect upon general health".

Mr. Macleod (Minister of Health) said that in the General Dental Service, the provision of dentures was running at about £2,750,000 before the charges came in under the 1951 Act. They dropped almost at once to under £1,500,000, which was nearly 50 per cent, and the figure had remained fairly constant at that level since.

There was a much more interesting story to be told about what had happened to conservative treatment and the effect of the 1952 Act.

Dealing with conservative treatment, he said in 1950–1, the number of applications was less than 4,500,000. In 1951–2 they rose to nearly 5,000,000. In 1952–3 despite the introduction of charges for dental treatment the number rose to just over 5,000,000 and in 1953–4 to about 5,500,000.

The figure for the first quarter of 1954 was higher than any previous quarters. So far as he could judge the trend, it was going on in 1954–5. Within that increase, which was gratifying, the number of children's courses, which was 170,000 in the last quarter of 1950, went up 40 per cent in the last quarter of 1951, 100 per cent in 1952, and 150 per cent in 1953. These were remarkable figures. While there had been a very considerable increase in children's courses there had been no fall in the conservative treatment for adults.

"That being so I do not see how the Opposition can go on denying that a charge on the Health Service can in certain circumstances have a social and beneficial result".

Referring to recruitment to the school dental service, he said, on December 31, 1947, 921 full-time dentists were employed. Year by year this figure had dropped until at the end of 1951 it was 713. By the end of 1952 it was 850, and by the end of last year 945. "We have more than restored the position to the peak it reached when the Health Service came in.

"If the Opposition decide to remove these particular charges I have no doubt at all they are threatening at the same time the future of the school dental service".

Colonel Malcolm Stoddart-Scott (C., Ripon) referred to dental hygienists who, he said, were now accepted by the dental profession and used with great success.

"Although there was some opposition when they were first appointed, they have proved their worth over and over again and there is room for more of them in the service.

"However, when we consider dental nurses, we must ask ourselves whether there are enough dentists to carry out the service we want for our schoolchildren. There can be only one answer to that question. The answer is that there are not sufficient dentists or students going into the profession to provide an adequate number of dentists. Nor are there sufficient facilities to give the dental service we require for our schools".

If dentists could not be got, it would be better to have dental nurses dealing with schoolchildren rather than an inadequate service as at present.

Commander T. D. Galbraith (Joint Under-Secretary of State for Scotland), replying to

the debate, said that he attached considerable importance to the increase which had taken place in the number of dentists employed in the School Dental Service. The number in the School Dental Service in Scotland in 1948 was 131.

It fell in 1950 to 94 and had risen every year since 1952, reaching 148 in 1953. On March 31 of this year he understood it reached the record figure of 164.

The number of courses provided for young people in the General Dental Service showed an increase from 183,000 in 1951 to 296,000 in 1952 and 535,000 in 1953. That was an extraordinary achievement. (*M.*, *May* 10, 1954.)

SOCIETY NOTES

EUROPEAN ORTHODONTIC SOCIETY CONGRESS 1954

The Grand Hotel, Eastbourne
July 1 to 6, 1954

President: MR. R. E. RIX

Hours THURSDAY, JULY 1

14.30 The Congress Office opens for registration and all information. (Office open at 9.00 on remaining days.)
18.30 Reception.
19.30 Dinner.
21.00 Council Meeting.

Hours FRIDAY, JULY 2

9.00 Annual Business Meeting (Members only).
Agenda: Minutes of the 29th Meeting at Monte Carlo; Business arising from the minutes; Election of nominated members; Hon. Secretary's Report; Hon. Treasurer's Report; Hon. Editor's Report; Any other business.
9.45 OPENING OF CONGRESS.—President's Address.
10.15 Mr. E. Gwynne Evans (*London*): The Orofacial Muscles, their Function and Behaviour in Relation to the Teeth.
11.00 Discussion.
11.20 Dr. J. Cauhépé (*Paris*) and Dr. J. Fieux (*Paris*): The Inheritance of Muscular Behaviour.
12.00 Discussion.
14.00 Mr. D. P. Walther (*London*): Skeletal Form and the Behaviour Pattern of Certain Orofacial Muscles.
14.45 Discussion.
15.10 Prof. Dr. J. Eschler (*Freiburg*): Electromyographic Researches of the Masticatory Musculature at Different Ages, and of the Masticatory Musculature and Soft Parts in Class II, Div. I Occlusion.
15.55 Discussion.
17.00 Prof. R. Selmer-Olsen (*Oslo*): Twin Lateral Incisors (A Preliminary Report).
17.20 Discussion.
21.30 Winter Garden Pavilion. Reception by the Mayor and Mayoress. Light refreshments, cabaret, dancing.

Hours SATURDAY, JULY 3

9.00 Prof. A. Lundström (*Stockholm*): The Importance of Genetic and Non-genetic Factors in the Facial Skeleton studied in 100 Pairs of Twins.
9.45 Discussion.
10.10 Prof. E. Fernex (*Geneva*): Histologie et malpositions dentaires.
10.40 Discussion.
11.00 Dr. B. Holly Broadbent (*Cleveland, U.S.A.*): The Use of the Bolton Standards as an Aid in Diagnosis and Treatment of Dentofacial Abnormalities.
12.00 Discussion.
14.00 Prof. A. Björk (*Copenhagen*): Bite Development and Body Build.
14.40 Discussion.
15.00 Prof. E. Muzj (*Rome*) and Prof. G. Maj (*Bologna*): Relations between the Type Construction of the Head and the General Somatic Constitution.
15.20 Discussion.
16.30 Miss L. Clinch (*London*), Dr. R. B. Dockrell (*Dublin*), and Dr. J. H. Scott (*Belfast*): An Investigation into the Dentitions in the Aran Islands.
17.15 Discussion.
Dancing in the Grand Hotel till Midnight.

Hours MONDAY, JULY 5

9.00 Mr. A. Hellgren (*Stockholm*): The Correlation between some Occlusal Characteristics and the Occurrence of Paradontal Disease.
9.30 Mr. J. H. Hovell (*London*) and Mr. R. D. Emslie (*London*): Malocclusion and Periodontal Health (*a*) An Orthodontist's Viewpoint; (*b*) A Periodontist's Viewpoint.
10.30 Discussion on the three previous Papers.
11.15 Mr. E. Harvold (*Oslo*): The Cleft-palate Deformity and its Orthodontic Treatment.
11.55 Discussion.
14.00 Mr. C. F. Ballard (*London*) and Mr. R. Grewcock (*London*): The Clinical Effects and Physiological Mechanism of Abnormal Paths of Closure.
15.00 Discussion.
15.20 Dr. K. Reitan (*Oslo*): Tissue Reaction as related to the Age Factor.
15.55 Discussion.
17.00 Prof. R. Hotz (*Zürich*): Investigations on the Influence of Maxillary Expansion on the Apical Base by plates.
17.20 Discussion.
20.00 BANQUET.

TUESDAY, JULY 6

9.00 Demonstrations.—These will be staged as follows:—
Mr. W. J. Tulley (*London*): Electromyography of Orofacial Muscles in Chewing and Swallowing.
Prof. Dr. J. Eschler (*Freiberg*): Electromyography and the Monobloc. (*a*) Effect of the "working bite" on

activity of the masseter, making use of the activator. (*b*) Medicamentous increase of the activity of the masseter with atonic musculature. (*c*) Examples of individual movements of teeth with the activator.

Capt. T. L. Jerrold (*U.S.A.*): A method of measuring Tooth Depression by means of Orientated Cephalograms.

Dr. K. Reitan (*Oslo*): The Combination of Fixed and Removable Appliances.

Mr. C. Bertram (*Den Haag*): Simple and Efficient Fixed Appliances.

Mr. P. Clarkson (*London*): Problems of Function and Appearance in the Surgery of the Jaws.

Mr. C. P. Adams (*London*): The Retention of Removable Appliances with the Modified Arrowhead Clasp.

Mr. R. L. Leech (*London*): The Choice of Anchorage in the Treatment of Class II, Div. I cases.

Mr. J. S. Rose (*London*): Local Irregularities Associated with Supernumerary Teeth.

Mr. Cradock Henry (*London*): Four Cases of Mandibular Surgery in Orthodontics.

Mr. B. C. Leighton (*London*): The Electric Soldering of Stainless Steel.

Mr. H. Richards (*London*): Some Abnormalities of the Deciduous Dentition.

Mr. C. V. Hill (*London*): Round Arch Multiband Technique, with some results.

Mr. A. W. Eastwood (*London*): Fixed Appliance Technique.

Mr. P. Burke (*Newcastle*): A Detailed Study of Incisal Eruption in a Girl with Unilateral Absence of the Second Upper Incisor.

Prof. G. E. M. Hallett (*Newcastle*): A Teaching Model for Demonstration of Eruption and Orthodontic Tooth Movement.

Prof. G. E. M. Hallett (*Newcastle*) and Mr. P. Burke (*Newcastle*): A Case of Progeria with Cephalometric and Carpal Index Studies.

Prof. Sheldon Friel (*Dublin*): Complete Series of Transections on View. (Thought to be the only complete series in existence.)

Mr. K. E. Nordin (*Stockholm*): Orthodontic Treatment in Some Cleft Palate Cases.

Mr. H. Watkin (*Liverpool*): A New Lock for a Facial Bow.

INSTITUTE OF BRITISH SURGICAL TECHNICIANS (INC.)

Dental Section

THE Denny Award for the best paper on a dental technological subject submitted by a member of the Institute each year was presented to Mr. F. A. Clarke (Craftsman Associate—Grade I of the Institute) at the concluding lecture of the season at the Eastman Dental Hospital on April 20.

This first presentation of the Award was made by the Chairman of the Dental Section of the Institute, Mr. J. R. Boswell, who congratulated Mr. Clarke and extended to him the best wishes of the Institute for continued progress and success in the Craft of Dental Technology. A replica of the Silver Trophy was also handed to Mr. Clarke as a permanent memento.

The lecture which preceded this ceremony was given by Mr. John W. McClean, L.D.S. R.C.S., of the Eastman Dental Hospital, on 'Heat-cured and Self-curing Acrylic Resins in Prosthetic Dentistry". Mr. McLean gave an eminently practical and illuminating demonstration of the subject, on which he had carried out extensive research.

Commencing with a review of the properties of acrylic resins, he contrasted the self-curing and cold-curing materials with those requiring heat treatment and explained the necessity for the addition of chemicals in place of the application of heat to produce polymerization and a stable material in the case of the cold-curing and self-curing resins. The tendency to discoloration in the case of the latter type of resins owing to the continued slight chemical reaction in the material was noted. The brush or laminated technique was described and advocated as lessening the risk of air locks and porosity due to bulk shrinkage towards the densest area. The necessity for careful deflasking was indicated, and in this connexion he had been considering the possibility of combining heat-cured with self-curing acrylics with a view to obtaining complete strength. While heat-cured resins had a higher tensile strength, the self-curing material had definite possibilities for partials and it would be interesting to see how it could be developed for the purpose of full dentures.

The lecture was illustrated by excellent lantern slides and many questions from the audience were efficiently dealt with by Mr. McLean.

BOROUGH POLYTECHNIC
Borough Road, London, S.E.1.

DEPARTMENT OF CHEMISTRY

The Dental Technology Section will be holding an Exhibition of Students Work and Dental Laboratories on Friday, July 2, from 1.30–9.0, and Saturday, July 3, from 9.30–12.30. A cordial invitation is extended to all Employers, Parents, and others interested in the Craft and Science of Dental Technology.

DENTAL BOARD OF THE UNITED KINGDOM

Chairman's Address at the Opening of the Sixty-sixth Session
May 12, 1954

GENTLEMEN,

I record the deep regret with which the Board have learnt of the death of Sir Frank Colyer, for many years the honoured doyen of the dental profession. An authority of world-wide repute on comparative dental anatomy and on growth and development of the jaws and irregularities in the arrangement of the teeth, distinguished also as the erudite curator of the Odontological Museum which he freely enriched from his own collection, Sir Frank had already attained fame and stimulated universal interest by his pioneer work on oral surgery in the First World War, and would no doubt have been an original member of the Board, had he not found himself in fierce opposition to the opening of the Register under the Dentists Act of 1921. As it was, he inaugurated the British Society of Dental Surgeons to help him impose his will on the Association, and whatever we may have thought at the time—and I confess to having served on the Council under him—we must agree that those were stirring and colourful days that often stretched long into the night and were all enriched and enlivened by his dynamic personality. That he was handsomely forgiven for this determined opposition was amply demonstrated at a ceremony in 1946 when the British Dental Association presented him with his portrait by Mr. Clarence White. Naturally, in these circumstances his connexion with the Board could not be close, but he consented to deliver for us a series of four postgraduate lectures on "Abnormal Conditions of the Teeth of Animals in their relationship to Similar Conditions in Man", which were collected and published in 1930 and which later formed the nucleus of one of his best-known works. He also took part in the Board's programme of lectures on dental health education. With a brilliant mind was combined great force of character, so that his students remembered what he told them, and his text-book, which he took over from Smale, was the supreme standard work for many years. He was greatly and deservedly honoured, and with his passing we have lost a pre-eminent member of our profession who in the heyday of his fame was acknowledged on all sides to be one of the greatest leaders of thought in English dentistry.

The Dentists Register for 1954, corrected to Jan. 31 of this year, is now available to us and it will not have gone unobserved that the total number of names in it, 15,549, is 87 less than the number in last year's edition. Account must be taken of the fact that in 1953 a letter sent out in accordance with section 12 of the Act of 1921 failed to elicit any reply from 91 practitioners, whose names were consequently removed from the Register. We may therefore say that in 1953 the effective Register, after having increased by an average of 183 names a year for four years, remained approximately constant. Figures made available by the dental schools suggest that 1954 may show an improvement, but that thereafter the number of new registrations must be expected to fall short of the wastage through death and retirement by an average of over three hundred names a year during the next ten years, and the effective Register in 1964 may contain about 12,000 names.

In my Address a year ago I commented fully on the situation which these figures disclose, and indeed I know it is causing great concern in many quarters, not only amongst those whose primary duty it is to secure that the public receive adequate dental treatment but also amongst those who are directly responsible for the welfare of our dental schools, which are once again far from overflowing. I do not think, however, that there will be any material improvement in the situation until every man in practice is filled with enthusiasm for his profession and acts as a recruiting agent. There seems to be general agreement that there are not enough men and women of the right mental calibre to satisfy the demands of all the professions and the only way to ensure that we get at least our fair share is for every member of the profession to interest possible entrants by his advice and to impress them by his example. Of course a great many factors enter into a young man's or woman's choice of a career and it may be that the Government, having become almost the sole purchaser of dental service, has upset the ordinary law of supply and demand by controlling fees. However, it is doubtful whether, nowadays, a return to exclusively private practice would result in any greater financial inducement to enter dentistry than is provided by the General Dental Services.

An obvious solution, or partial solution, would seem to be to lower the entrance requirements and so cast our net wider. Two formidable hurdles confront the less academically gifted but often more practically minded aspirants to the profession. They are the matriculation examination and the pre-medical examination in Chemistry, Physics, and Biology, or its equivalent, which are usually required by the universities from candidates for their degrees in dentistry. The Royal College of Surgeons of England have sought to temper the wind from this direction and such a move should encourage those candidates who ask for nothing more ambitious than to spend their lives putting into practice what they have been taught as undergraduates. Indeed it may be that most men who consider entering a profession fall into this category: they do not seek to extend the frontiers of knowledge by research but are content to walk by the light of the lamp that illuminated their path in college, trimmed perhaps by some postgraduate reading or at most by a refresher course. If this be their object, and it is a very worthy and proper aim, it may be that the university degree course is needlessly advanced: indeed in most cases it is considerably in excess of the minimal requirements laid down by the General Medical Council, and may be more appropriate to the aspiring consultant or to one who hopes to enjoy an academic career.

In addition therefore to the possible effect of legislative interference with the ordinary economic laws which normally influence entry into a profession, there may have been a barrier set up by ourselves in our entirely laudable desire to ensure that entrants to the profession have the highest qualifications and are supremely well equipped for their life's work, and it is to be hoped that the schools will not look askance at candidates with less

ambitious aspirations. But there is, as I have said, a third factor, and that is the way we ourselves feel about our profession. If we are enthusiastic about our work, proud of our service to the community and happy and secure in our conditions of service we shall, even unconsciously, encourage young people to join us. The attitude of the practising dentist must always be the decisive factor in recruitment, for every prospective recruit goes to his own dentist for advice before making up his mind.

If, however, we are not satisfied with the conditions under which we serve, or that we are doing the best that can be done for the dental health of the nation and for progress in the science and art of dentistry, it is on every count our manifest duty as an educated profession to produce a better system and point a better way. Each one of us has this duty—to confer with our colleagues and discuss what we think is wrong with our daily practice. If our criticism be genuinely constructive can there be any doubt that we shall devise a remedy? There is a Bill on the stocks that provides for an experiment that may help generations as yet unborn to a better enjoyment of dental health, but what we need, and what the country needs so badly, is an efficient, enthusiastic, willing, and happy profession now, and I believe that Parliament is anxious to give us the means to make it so if only we will say clearly what the wisest course to adopt may be. But we have got to make up our own minds in the matter and not wait until someone else offers a solution which we may find unacceptable.

There is yet another factor in recruitment and that is the matter of expense. In the last few years I have avoided public comment on the provision of bursaries for dental students because there has been a constant prospect of legislation that would interrupt any new or resuscitated scheme by depriving the Board or their successors of the power to offer them, yet financial considerations loom even larger than they did before the war and affect a greater section of the community and in particular those from amongst whom we used to draw many of our recruits. The bursary scheme did, however, serve a very useful purpose even then by stimulating general recruitment and could readily be adapted to promote recruitment of just the kind of candidate to whom I have referred as the practical man who finds his satisfaction in practising what he has been taught without penetrating further than is necessary into the scientific background of his work. Such candidates are not likely to win scholarships in the ordinary way in the academic field—indeed they cannot always achieve university entrance standard—but they might satisfy the new entrance standards for the licence and they could be very worthy members of, and indeed an adornment to, the profession if they had the necessary financial assistance to enable them to spend four years in acquiring specialized knowledge. These men of course often need such financial assistance just as much as their more academically gifted competitors. It is of interest that of the men who joined the register by virtue of a qualification granted in the United Kingdom during the period that the bursary scheme was effective, at least one in every six had been in receipt of a Dental Board bursary, and over that period the increase in the number of names in the Register is approximately equal to the number who qualified with the Board's financial help; that is to say that without the bursary scheme the Register might have remained static throughout these years. It would seem to be a pity that the hiatus should be allowed to persist in a policy which was only interrupted by the exigencies of war economy and has not been resumed only because it was agreed that the responsibility to continue the scheme should be transferred to the State now that the Board has proved the value of the principle.

The Teviot Committee, after declaring that the need for grants to students was greater than the profession could be expected to provide through the Board, recommended that State grants should be made available for the purpose of assisting suitable students to whatever extent might be necessary in particular cases, pointing out that the sum involved would in any event be only a small percentage of the cost of providing a comprehensive service and that, if it were not made available, a comprehensive service would not be able to look to an adequate number of dentists. The Committee continued in these words: "We are aware that a plea for the assistance of university students of many kinds, or all kinds, has been put forward elsewhere. But we would raise this question: Ought there to be some connexion between the spending of public money on bursaries and the relative need for men and women of various professions? If there is such a connexion, a very high priority should attach to dental training". The state of the Register to-day illustrates the importance of this question, and it is rapidly becoming a matter of expediency or even necessity rather than principle that there should be such a connexion so far as dentistry is concerned; but the "suitable students" to whom the Committee referred need not be selected solely for their academic prowess. There are other qualities of character, mind, and hand that go to the making of a dentist, and if a new bursary scheme were devised the proposed Dental Council might be able to perform a useful function in selecting suitable students from amongst the applicants, though probably we are all still of the opinion that they should not be required to allocate money collected from dentists to this purpose.

In the meantime we still have the duty of allocating our surplus funds to dental education and research and to other public purposes connected with the profession of dentistry, and it is in pursuance of this duty that the Board have now decided to set aside a sum to provide grants for study overseas. It had been represented to us that, while a number of schemes enable, by their assistance, both senior and junior students to study at seats of learning overseas for periods varying from six months to three years, virtually no source exists from which a postgraduate student or research worker can obtain any assistance towards meeting the cost of a short visit overseas for the purpose of furthering his studies by making contact with others working in similar fields. We have therefore announced that we are prepared to consider applications from persons engaged in substantial research or advanced postgraduate study for grants towards the cost of short visits overseas, not normally exceeding four weeks in duration. The Board must of course be satisfied that the proposed visit will be likely to further the public interest. This scheme is still in an experimental stage and the funds available are not large, so that assistance can only be given to the most deserving. The number and quality of the applications already received does, however, indicate that these grants correspond to a real need and may produce valuable additions to the knowledge and techniques at our disposal.

The Board have also decided to attempt to build up and maintain a source of information about the conditions under which dental practitioners registered or

legally entitled to practise in their own country may practise abroad. For this purpose we have prepared, and proposed to distribute throughout the world, a questionnaire concerning both the regulation of practice and details of the educational curriculum, and it is hoped that the answers received will enable us to compile and publish a work of reference which has been greatly needed for many years. In this undertaking we have been fortunate in receiving the co-operation of the Fédération Dentaire Internationale, who were contemplating a similar scheme and who are in a position to give us the best available advice both on the form of the questions and on the most promising methods by which answers may be obtained.

At a time at which there has been a considerable quickening of public interest in the dental health of children, it is perhaps apposite for me to refer here to the work performed by the Board in the field of dental health education. The Departmental Committee of 1917–19, expressed the view that "it might be possible to affect very materially the health of the nation by a properly directed educational propaganda designed to impress upon people the importance of looking after their own and their children's teeth", and from the first years of their existence the Board have assumed that this was among the purposes to which they are required by the Act of 1921 to allocate their surplus income.

It has never been possible for the Board to contemplate the planning and execution of a national campaign against what has recently been called "the widespread ignorance and apathy which exist in this country to-day on questions of oral hygiene and dental health". It has been estimated that the cost of such a campaign might in these days amount to a million pounds. In the period between the wars and during the last eight years the Board have, however, spent an average of more than four thousand pounds a year on the provision of instruction in oral hygiene and on lectures and what are now called "visual aids". Latterly, we have followed the principle that with the funds available to us our most useful course is to experiment with the object of producing as wide a variety as possible of material, not in large quantities, but to serve as a pattern of the type of material which, if distributed on a national scale, would achieve the best result. To produce such material without reference to the prospective consumer is, however, to court sterility, and we have therefore found it necessary to obtain sufficient quantities of some of our productions for distribution to local authorities, schools, clinics, practitioners, and others for whose use they are designed. It is for this reason also that we recently attempted to spread a wider knowledge of our productions and to this end sought the help of our friends of the Press at a conference and display of exhibits which appears to have been successful at least in stimulating a large number of inquiries. In all this work we have had the indispensable co-operation of experts both in teaching and in publicity, as well as in dentistry, and both the Board and the profession owe them a very deep debt of gratitude for the constant care which they have devoted to maintaining the high quality of our productions.

I am glad to be able to tell you that the list of disciplinary cases which are to come before us is not a long one, and although there are other matters of importance for our consideration, I do not think that on this occasion we shall be required to sit after Thursday.

Antibiotics in Dentistry

An antibiotic is a substance elaborated by micro-organisms which have the property of inhibiting the growth of, or destroying, other micro-organisms under propitious conditions.

ABSTRACTS
from Other Journals

Penicillin, although not a panacea against all infections, is efficacious against most dental ones. Generally, Gram-positive bacteria are penicillin-sensitive, as are the gonococci and meningococci. Different strains of the same organisms react differently to this antibiotic substance. Recent work has shown that 50 per cent of the strains of *Staph. aureus* are resistant, and in these cases other antibiotics must be used. Such cases are rare in dental surgery. Penicillin can be used in certain cases of Vincent's infection and actinomycosis. It is not effective against Gram-negative bacillary infections, fungus or virus infections, or aphthous ulcers. Penicillin, used topically, is more liable to sensitize a patient than it is when used systemically. Although it is virtually non-toxic, reactions ranging from mild erythema to death have been reported. In the early stages of the less severe urticarial reactions the administration of an antihistamine agent such as benadryl is of value. Before using penicillin, the history of reactions to previous administrations should be forthcoming. While saline solutions of crystalline penicillin produce a satisfactory blood level rapidly, these are eliminated with equal rapidity. Various methods have been devised to overcome this drawback and it is now usual to use procaine-penicillin preparations. Such a solution is broken up slowly in the muscle into which it is injected, releasing procaine and penicillin, which are then absorbed and which produce an effective penicillin blood level for 24–36 hours. The dose is usually 300,000 units

every 24 hours. If in addition an immediate high blood level is required 100,000 units of the crystalline penicillin may be injected at the same time.

Aureomycin, chloromycetin, and terramycin resemble each other in many respects. They have a wider bacterial spectrum than penicillin and are effective against some of the larger viruses. Side effects such as vomiting may be reduced by drinking a glass of milk at the time the drug is taken. Chloromycetin is said to cause aplastic anæmia in some patients and for this reason it should not be used in dental surgery because other agents are available. Terramycin produces few mild sick effects and can be used against many aerobic and anaerobic Gram-positive and Gram-negative organisms, some of which are resistant to penicillin. Aureomycin appears to be of use in the treatment of herpetic stomatitis.

Streptomycin is used as a component of poly-antibiotic preparations for root-canal therapy.

Tyrothricin and Bacitracin. These are toxic and are to be used topically in the mouth.

In regard to the use of antibiotics generally in dental treatment consideration is given to caries, pre-extraction prophylaxis, Vincent's infection and root-canal therapy. In cases of rampant caries there may be some justification for using penicillin dentifrices, although the results are not encouraging. By reducing the incidence of post-extraction bacteræmia, antibiotics have a very definite place in cases of damaged heart valves and their use is also indicated in otherwise normal persons if the operation involves an infected region. Maximum doses of the crystalline and procaine penicillin are indicated half an hour before the work is commenced, providing there are no contra-indications. In Vincent's disease, penicillin may be used topically so long as the possibility of sensitization is borne in mind. For root-canal therapy the preparation known as P.B.S.C. paste (penicillin, bacitracin, streptomycin and sodium caprylate in a silicone vehicle) is found to be most effective.

The author reiterates the fact that antibiotics are not a substitute for rational surgery. —Ostrander, F. D. (1953), *J. Canad. dent. Ass.*, **19**, 643.

Temporary Splinting—An Adjunct in Periodontal Therapy

A new design of periodontal splint which can be made in either metal or acrylic with one end open in order that the splint can be sprung over the greatest convexity of the teeth is described and well illustrated. This type of splint is retained in position by means of wires threaded through both areas of the splint in the last interdental space.

The indications for use are said to be:—

1. Immobilization of posterior teeth to: (a) Promote healing; (b) Facilitate occlusal adjustment.
2. To provide splinting for diagnostic purposes.
3. To protect the pack and stabilize the teeth in re-attachment attempts.

Advantages claimed are:—

1. The cast splint provides complete rigidity and prevents lateral and apical movement.
2. Ease and rapidity of construction.
3. It can be constructed economically.— Friedman, N. (1953), *J. Periodont.*, **24**, 229.

Odontogenic Tumours

This paper deals with the clinical and radiological picture, treatment and pathology of fifteen cases which the authors describe with full case-histories. The cases are illustrated by clinical photographs, twenty-four radiographs and thirty-six photomicrographs.

The first six cases are of ameloblastomas and show the great variety of histopathology which is found not only between tumours, but within the same tumour. Two of the cases described are ameloblastomas with metastases.

Three cases of cementoblastomas are described and the histological stages in the development of this type of tumour are illustrated. The remaining cases discussed are mixed odontogenic tumours.

The final section relates these cases to the classification of odontogenic tumours suggested by the American Academy of Oral Pathology, commenting on how they fit in to this classification and suggesting slight modifications.—Husted, E., and Pindborg, J. J. (1953), *Odont. Tidsk.*, **61**, 275.

A Method for Objective Colour Determination of the Gingivæ

This paper describes an objective method of determining the change in gingival condition which could be used to assess accurately the progress in a treatment of periodontal disease instead of using common subjective methods which are necessarily uncertain.

The method is based on the fact that inflamed tissues have an increased oxygen consumption which results in a change in the oxyhæmoglobin–hæmoglobin ratio. This in turn is responsible for the change of colour and the alteration in wave-length.

The apparatus used to determine this alteration in the wave-length consists of a monochromatic source of light, the wave-length of which is measured by means of a photo-tube when it is reflected from fixed points on the gingivæ. The wave-length and light intensity are measured on an oscillograph film.—KÖNNERUP and LUNDQVIST (1953), *Odont. Revy*, **4**, 107.

DENTAL ATTENDANTS

Remuneration and Conditions of Service

The Nurses and Midwives Council has agreed rates of pay and conditions of service for dental attendants, aged 16 years and over, employed in dental hospitals, dental departments of general hospitals and, in England and Wales, in dental clinics administered by local authorities, to be brought into operation with effect from April 1, 1954.

The salary scales and conditions of service in this agreement relate only to dental attendants whose duties include: (*a*) Preparation and sterilizing of instruments, equipment, dressings, etc.; (*b*) Reception, attendance upon, and preparation of patient before the dentist starts treatment; (*c*) Preparation of filling materials and materials for impressions; (*d*) Recording of treatment including charting from the dentist's instructions. Clerical work; (*e*) Preparation of hypodermic syringes; (*f*) Maintenance of general anæsthetic apparatus, replacement of cylinders, etc.; (*g*) Other appropriate duties required by the employing authority.

Salary Scale.—Aged 16 years, £160; 17 years, £175; 18 years, £200; 19 years, £215; 20 years, £230; 21 years and over, £245 × £12 10s. (6)—£320.

Dental attendants who are non-resident and whose place of employment is in London or the Metropolitan Police Area shall receive in addition to the above rates London weighting as follows:—*Administrative County of London*: 16 years, £15; 17 years, £18; 18 years and over, £25. *Metropolitan Police District outside the Administrative County of London*: 16 years, £9; 17 years, £12; 18 years and over, £15.

Dental attendants under 21 years of age on April 1, 1954, shall be assimilated to their appropriate age point at that date; those aged 21 years or over on April 1, 1954, shall be assimilated at the age 21 point plus one increment for each completed year of service in the grade after attaining age 21. New entrants aged 21 years or over shall enter the scale at the age 21 point.

If in any case a dental attendant would be worse off on the appropriate new salary scale she may, if she wishes, mark time on her present remuneration on a personal basis until such time as the new rate becomes more favourable, except that an employee paid on a salary scale with a higher maximum than the appropriate new scale may retain her old scale and conditions of service. An employee who elects to accept the new scale shall have applied to her the conditions of service agreed by the Council.

The normal working week shall be 39 hours exclusive of meal-times. Employees up to 21 years of age shall be given two weeks annual leave and those over 21 years of age three weeks, and, in addition, the six statutory and general national holidays.